THE MEDSTAT GROUP

a Medical Economics company

PREVENTIVE AND ILLNESS-RELATED CARE FOR CHILDREN UNDER MEDICAID: THE EFFECTS OF OBRA-89 AND OTHER FACTORS ON UTILIZATION AND EXPENDITURE PATTERNS

Year 3 Report
HCFA Contract No. 500-92-066

Prepared for:

Feather Davis, Project Officer
Office of Research and Demonstrations
Health Care Financing Administration
7500 Security Boulevard
Baltimore, MD 21244-1850

Prepared by:

Elicia J. Herz, Ph.D.
Anita Chawla, Ph.D.
Kate Sredl, B.A.
Linda Graver, B.A.
Sean Kennedy, B.A.
The MEDSTAT Group
4401 Connecticut Avenue, NW
Suite 400
Washington, DC 20008

November 27, 1996

ACKNOWLEDGMENTS

Many individuals contributed in a number of significant ways to this project in general, and to this report in particular. The authors sincerely thank Jeffrey Wasserman, Project Director, for his management oversight, analytic design contributions, and guidance on the overall structure and organization of this report. William Crown and Robert Houchens provided invaluable statistical and econometric consulting. Kristin Miljus coordinated production of the regression tables and assisted with several analytic tasks. Don Schroeder and Jon Blake assisted with production of the analytic files. Feather Davis, Project Officer, HCFA-ORD gave her continuous support to this project. Lastly, we appreciate the efforts of Desiree Wilson in preparing and producing this report.

TABLE OF CONTENTS

I. EXECUTIVE SUMMARY I-1
II. INTRODUCTION AND BACKGROUND II-1
A. Purpose of Study II-1
B. The EPSDT Program II-2
C. Previous Research II-3
1. Evidence of the Effectiveness of Specific Program Changes to Medicaid and EPSDT II-4
2. Factors Associated with the Receipt of Selected Preventive Services II-4
a. Well-Child Visits II-5
b. Immunizations II-5
c. Dental Visits II-6
3. The Impact of Preventive Care on Use of Illness-Related Services and Expenditures II-8
D. Issues/Hypotheses to be Addressed II-9
E. Organization of the Report II-10
III. DATA SOURCES AND METHODOLOGY III-1
A. Analysis Population III-1
B. Analytic File Construction and Key Variables III-2
1. Demographics and Medicaid Enrollment Characteristics III-2
2. Preventive Medical Care Visits III-2
3. Immunizations III-3
4. Diagnosis/Treatment Visits and Other Illness-Related Medical Services III-4
5. Dental Services III-4
6. Provider Supply/Access: Supplemental County-Level Variables III-5
C. General Multivariate Methodology III-5
1. Model Specifications and Estimation Strategy – Utilization of Health Services III-6
2. Model Specifications and Estimation Strategy – Total Annual Expenditures III-6
IV. PROFILES OF STUDY STATES IV-1
A. Size and Composition of the Medicaid Program in Each State IV-1
B. Provider Participation and Reimbursement Rates IV-2
C. Periodicity Guidelines for Well-Child Visits and Immunizations IV-4
V. USE OF STANDARD WELL-CHILD CARE V-1
A. Summary of Trends from Descriptive Analyses of Standard Well-Child Care V-1
B. Preventive Care Visits-Multivariate Analyses V-3
1. Highlights of the Pooled Multivariate Results for Preventive Care Visits V-4
2. Probability of Receiving Any Preventive Care Visits--Pooled Logistic Models V-5
a. Direct Measures of Change Over Time and Provider Supply V-5
b. Other Medicaid Programmatic and Provider Supply/Access Measures V-7
c. Medicaid Eligibility and Enrollment Characteristics V-7
d. Demographics and Metropolitan Residential Status V-7
3. Number of Preventive Care Visits Among Users--Pooled Linear Models V-8
a. Direct Measures of Change Over Time and Provider Supply V-8
b. Other Medicaid Programmatic and Provider Supply/Access Measures V-8
c. Medicaid Eligibility and Enrollment Characteristics V-10
d. Demographics and Metropolitan Residential Status V-10
C. EPSDT Screening Visits - Multivariate Analyses V-11
1. Highlights of the Pooled Multivariate Results for EPSDT Visits V-11
2. Probability of Receiving Any EPSDT Visits--Pooled Logistic Models V-13
a. Direct Measures of Change Over Time and Provider Supply V-13
b. Other Medicaid Programmatic and Provider Supply/Access Measures V-15
c. Medicaid Eligibility and Enrollment Characteristics V-15
d. Demographics and Metropolitan Residential Status V-16
3. Number of EPSDT Visits Among Users--Pooled Linear Models V-16

a. Direct Measures of Change Over Time and Provider Supply V-16
b. Other Medicaid Programmatic and Provider Supply/Access Measures V-18
c. Medicaid Eligibility and Enrollment Characteristics V-18
d. Demographics and Metropolitan Residential Status V-18
D. Age-Appropriate Immunizations - Multivariate Analyses V-19
1. Highlights of the Pooled Multivariate Results for Age-Appropriate Immunizations V-19
2. Probability of Receiving Any Age-Appropriate Immunizations--Pooled Logistic Models V-21
a. Direct Measures of Change Over Time and Provider Supply V-21
b. Other Medicaid Programmatic and Provider Supply/Access Measures V-23
c. Medicaid Eligibility and Enrollment Characteristics V-23
d. Demographics and Metropolitan Residential Status V-24
3. Number of Age Appropriate Immunizations Among Users--Pooled Linear Models V-24
a. Direct Measures of Change Over Time and Provider Supply V-24
b. Other Medicaid Programmatic and Provider Supply/Access Measures V-26
c. Medicaid Eligibility and Enrollment Characteristics V-26
d. Demographics and Metropolitan Residential Status V-26
VI. USE OF SELECTED DIAGNOSIS AND TREATMENT SERVICES VI-1
A. Summary of Trends from Descriptive Analyses of Illness-Related Services VI-1
B. Diagnosis/Treatment Visits - Multivariate Analyses VI-1
1. Highlights of the Pooled Multivariate Results for Diagnostic and Treatment Visits VI-2
2. Probability of Receiving Any Diagnostic and Treatment Visits - Pooled Logistic Models VI-4
a. Direct Measures of Change Over Time and Provider Supply VI-4
b. Other Medicaid Programmatic and Provider Supply/Access Measures VI-4
c. Medicaid Eligibility and Enrollment Characteristics VI-6
d. Demographics and Metropolitan Residential Status VI-6
3. Number of Diagnostic and Treatment Visits Among Users - Pooled Linear Models VI-7
a. Direct Measures of Change Over Time and Provider Supply VI-7
b. Other Medicaid Programmatic and Provider Supply/Access Measures VI-9
c. Medicaid Eligibility and Enrollment Characteristics VI-9
d. Demographics and Metropolitan Residential Status VI-10
C. Prescription Drugs - Multivariate Analyses VI-10
1. Highlights of the Pooled Multivariate Results for Prescription Drugs VI-10
2. Probability of Receiving Any Prescription Drugs - Pooled Logistic Models VI-12
a. Direct Measures of Change Over time and Provider Supply VI-12
b. Other Medicaid Programmatic and Provider Supply/Access Measures VI-12
c. Medicaid Eligibility and Enrollment Characteristics VI-14
d. Demographics and Metropolitan Residential Status VI-14
3. Number of Prescription Drugs Among Users - Pooled Linear Models VI-15
a. Direct Measures of Change Over Time and Provider Supply VI-15
b. Medicaid Programmatic and Provider Supply/Access Measures VI-17
c. Medicaid Eligibility and Enrollment Characteristics VI-17
d. Demographics and Metropolitan Residential Status VI-18
D. Inpatient Care - Multivariate Analyses VI-18
1. Highlights of the Pooled Multivariate Results for Inpatient Care VI-18
2. Probability of Receiving Any Inpatient Stays - Pooled Logistic Models VI-20
a. Direct Measures of Change Over Time and Provider Supply VI-20
b. Other Medicaid Programmatic and Provider Supply/Access Measures VI-20
c. Medicaid Eligibility and Enrollment Characteristics VI-22
d. Demographics and Metropolitan Residential Status VI-22
3. Number of Inpatient Days Among Users - Pooled Linear Models VI-23
a. Direct Measures of Change Over Time and Provider Supply VI-23
b. Other Medicaid Programmatic and Provider Supply/Access Measures VI-23
c. Medicaid Eligibility and Enrollment Characteristics VI-25
d. Demographics and Metropolitan Residential Status VI-25

VII. CHILDREN'S DENTAL SERVICES UNDER MEDICAID VII-1
A. Descriptive Analysises of Dental Service Utilization....VII-1
1. Characteristics of Dental Service Recipients VII-2
a. Demographic Characteristics....VII-2
b. Medicaid Eligibility VII-2
c. Metropolitan Status....VII-3
2. Medicaid Children's Use of Dental Care by Selected Characteristics and Preventive Medical Care Use....VII-3
a. Demographic Characteristics....VII-3
b. Medicaid Eligibility VII-4
c. Metropolitan Status....VII-5
3. Enrollment Adjusted Utilization of Dental Services VII-5
4. Dental Service Utilization and Concentration of Dental Providers....VII-6
B. Dental Care Services – Multivariate Analyses VII-6
1. Highlights of the Pooled Multivariate Results for Dental Care Services VII-6
2. Probability of Receiving Dental Services – Pooled Logistic Models....VII-8
a. Direct Measures of Change Over Time and Provider Supply....VII-8
b. Other Medicaid Programmatic and Provider Supply/Access Measures.... VII-13
c. Medicaid Eligibility and Enrollment Characteristics VII-13
d. Demographics and Metropolitan Residential Status VII-14
3. Number of Dental Services Among Users – Pooled Linear Models.... VII-14
a. Direct Measures of Change Over Time and Provider Supply.... VII-14
b. Medicaid Programmatic and Provider Supply/Access Measures VII-19
c. Medicaid Eligibility and Enrollment Characteristics VII-19
d. Demographics and Metropolitan Residential Status VII-19
VIII. TOTAL MEDICAID EXPENDITURES VIII-1
A. Descriptive Analyses of Total Expenditures VIII-1
1. Users of Any Services....VIII-2
2. Users of Any Inpatient Services....VIII-2
B. Total Medicaid Expenditures – Multivariate Analyses....VIII-3
1. Highlights of the Pooled Multivariate Results for the Probability of Using Services VIII-3
2. The Probability of Receiving Health Care Services – Pooled Logistic Models VIII-4
a. Direct Measures of Change Over Time and Provider Supply....VIII-7
b. Other Medicaid Programmatic and Provider Supply/Access Measures....VIII-7
c. Medicaid Eligibility and Enrollment Characteristics VIII-8
d. Demographics and Metropolitan Residential Status VIII-8
3. Highlights of the Pooled Multivariate Results for Total Medicaid Expenditures....VIII-9
4. Total Expenditures Among Users – Pooled Linear Models.... VIII-10
a. Direct Measures of Change Over Time and Provider Supply.... VIII-10
b. Medicaid Programmatic and Provider Supply/Access Measures VIII-10
c. Medicaid Eligibility and Enrollment Characteristics VIII-13
d. Demographics and Metropolitan Residential Status VIII-13
IX. DISCUSSION AND CONCLUSIONS....IX-1
A. Summary of Major Changes to Medicaid Under the OBRA-89 Legislation IX-1
B. Implementation of OBRA-89 and Other Key Medicaid Program Features in the Study States....IX-2
1. Composition of the Medicaid Child Population in Each Study State....IX-2
2. Key Benefit Coverage Policies for Preventive and Illness-Related Care IX-3
3. Provider Fee Schedules and Participation Requirements IX-4
C. Trends in the Provision of Preventive Care to Children IX-5
1. Change Over Time in The Receipt of Selected Preventive Services IX-6
2. Effects of Change in Primary and Dental Provider Supply Over Time on the Receipt of Selected Preventive Services....IX-7
3. Effects of Other Factors on the Receipt of Selected Preventive Services IX-7

a. Other Factors Affecting Utilization of Well-Child Visits, EPSDT Screening Visits and Age-Appropriate Immunizations IX-7
b. Other Factors Affecting Utilization of Preventive Dental Services IX-9
D. Trends in the Provision of Illness-Related Services to Children IX-11
1. Change Over Time in The Receipt of Selected Illness-Related Services IX-11
2. Effects of Change in Primary Care and Dental Provider Supply Over Time on the Receipt of Selected Illness-Related Services IX-12
3. Effects of Other Factors on the Receipt of Selected Illness-Related Services IX-12
a. Other Factors Affecting Utilization of Diagnostic and Treatment Visits, Prescription Drugs and Inpatient Care IX-12
b. Other Factors Affecting Utilization of Diagnostics and Therapeutic Dental Services IX-14
E. Trends in Total Medicaid Expenditures for Children IX-15
1. Change Over Time in Total Annual Expenditures IX-15
2. Effects of Change in Primary Care Provider Supply Over Time on Total Annual Expenditures IX-15
3. Effects of Other Factors on Total Annual Expenditures IX-15
X. REFERENCES X-1
XI. APPENDICES XI-1

List of Tables

Table IV-1	Medicaid Enrollees Under Age 21, 1989 and 1992, Four Study States
Table V-1	Logistic Regression Summary: Probability of Receiving Any Well-Child Visits, Children Under 3 Years of Age Only
Table V-2	Ordinary Least Squares Regression Summary: Number of Well-Child Visits, Users Under 3 Years of Age Only
Table V-3	Logistic Regression Summary: Probability of Receiving Any EPSDT Screening Visits, Children Under 3 Years of Age Only
Table V-4	Ordinary Least Squares Regression Summary: Number of EPSDT Screening Visits, Users Under 3 Years of Age Only
Table V-5	Logistic Regression Summary: Probability of Receiving Any Age-Appropriate Immunizations, Children Under 3 Years of Age Only
Table V-6	Ordinary Least Squares Regression Summary: Number of Age-Appropriate Immunizations, Users Under 3 Years of Age Only
Table VI-1	Logistic Regression Summary: Probability of Receiving Any Diagnostic and Treatment Visits, Children Under 21 Years of Age
Table VI-2	Ordinary Least Squares Regression Summary: Number of Diagnostic and Treatment Visits, Users Under 21 Years of Age
Table VI-3	Logistic Regression Summary: Probability of Receiving Any Prescription Drugs, Children Under 21 Years of Age
Table VI-4	Ordinary Least Squares Regression Summary: Number of Prescription Drugs, Users Under 21 Years of Age
Table VI-5	Logistic Regression Summary: Probability of Receiving Any Inpatient Care, Children Aged 1 to 12 Years
Table VI-6	Ordinary Least Squares Regression Summary: Number of Inpatient Days, Users Aged 1 to 12 Years
Table VII-1	Logistic Regression Summary: Probability of Receiving Any Dental Services, Children Over 3 Years of Age
Table VII-2	Logistic Regression Summary: Probability of Receiving any Diagnostic Dental Services, Children Over 3 Years of Age
Table VII-3	Logistic Regression Summary: Probability of Receiving any Preventive Dental Services, Children Over 3 Years of Age
Table VII-4	Logistic Regression Summary: Probability of Receiving any Therapeutic Dental Services, Children Over 3 Years of Age
Table VII-5	Linear Regression Summary: Number of Dental Services, Children Over 3 Years of Age
Table VII-6	Linear Regression Summary: Number of Diagnostic Dental Services, Children Over 3 Years of Age
Table VII-7	Linear Regression Summary: Number of Preventive Dental Services, Children Over 3 Years of Age

Table VII-8 Linear Regression Summary: Number of Therapeutic Dental Services, Children Over 3 Years of Age

Table VIII-1 Logistic Regression Results: Probability of Receiving any Health Services, Children 1 to 12 Years of Age

Table VIII-2 Logistic Regression Results: Probability of an Inpatient Stay Conditional on Use, Children 1 to 12 Years of Age

Table VIII-3 Linear Regression Summary: Total Annual Health Care Expenditures for Outpatient Only Users, Children 1 to 12 Years of Age

Table VIII-4 Linear Regression Summary: Total Annual Health Care Expenditures for Users of any Inpatient Services, Children 1 to 12 Years of Age

I. EXECUTIVE SUMMARY

The Early and Periodic Screening, Diagnostic and Treatment Program (EPSDT) is an ambitious preventive care program for Medicaid-enrolled children. Added to the Medicaid program under P.L. 90-248 in 1967, EPSDT provides screening and preventive care, as well as referral for services necessary to correct health problems identified through screening. Because of concerns over low EPSDT participation rates among both beneficiaries and providers, Congress passed the Omnibus Budget Reconciliation Act of 1989 (OBRA-89). The Act set standards for performance at the State level, created incentives for greater provider participation, and broadened the scope of services covered (including both preventive and illness-related care).

This report describes the results of our analyses that investigated the impact of OBRA-89 and other factors on the provision of preventive and illness-related services as well as total Medicaid expenditures for Medicaid-enrolled children. Several descriptive analyses and State-specific case studies completed previously under this contract have guided these multivariate analyses. In our earlier work, it became clear that while the Federal legislative initiatives of the late 1980s and early 1990s were aimed at improving the delivery of preventive care through EPSDT, a considerable amount of Medicaid-financed well-child care was provided outside of EPSDT through the regular Medicaid program. In addition, we concluded that the distinction between EPSDT services and similar preventive care services provided to children through the regular Medicaid program was largely a matter of billing practices as opposed to significant, substantive differences in quality or comprehensiveness of care. Thus, the analyses described in this report focus primarily on all Medicaid-financed preventive services for children (EPSDT and non-EPSDT combined), not just those services rendered through the official EPSDT program.

A. Sample and Methodology

Medicaid enrollment and claims data from four States (California, Georgia, Michigan and Tennessee) were used to create cross-sectional, child-level analytic summary files for calendar years 1989 and 1992. Designation of services as preventive in nature or illness-related was based on both diagnosis and procedure codes. County-level information on provider supply was derived from the Area Resource File.

The study population excluded all institutionalized, crossover (dually enrolled in Medicare), and capitated children under 21 years of age. Independent random samples of about 10 percent of the child Medicaid population were drawn for each State/year combination to support our statistical analyses.

Our general methodology for analyzing health service use for children enrolled in the Medicaid program was to estimate a series of multivariate models using several dependent measures: preventive

medical care visits, EPSDT screening visits, age-appropriate immunizations, diagnostic and treatment visits, prescription drugs, inpatient care, all dental services, and diagnostic, preventive, and therapeutic dental services separately. For the measures of service use, we specified a dependent variable indicating whether the child had received at least one service in the relevant service category and estimated an equation using logistic regression. To analyze intensity of use, the dependent measure was the number of services, days or visits in the relevant service category; we estimated these equations using ordinary least squares regression.

For our expenditure analyses, we employed a four-part model similar to that developed by Duan et al. (1983). In this model specification, we first estimated the probability of receipt of any health services and the probability of an inpatient stay among users of health care using logistic regression. The third and fourth equations of the four-part model use ordinary least squares regression to estimate total annual Medicaid expenditures for users of outpatient services only and total annual Medicaid expenditures for users of any inpatient care. All expenditures are reported in constant 1992 dollars.

We conducted State-specific and pooled analyses--across States and over time. For the analyses in which we assessed changes over time--the focus of our evaluation of the impact of OBRA-89--we pooled 1989 and 1992 data and included a dummy variable for 1992 as well as an interaction term to assess the impact of changes in provider supply over time on utilization and expenditures. In addition to these policy measures, three additional classes of explanatory variables were included in our regression models: (1) other Medicaid programmatic and provider supply/access measures, (2) Medicaid eligibility and enrollment characteristics, and (3) demographics and metropolitan residential status.

Because the analyses over time are those which allow us to make some assessment of the impact of legislative changes, it is the results from the estimation of the pooled models that we report and discuss in detail in the following chapters. We briefly discuss our findings from the estimation of models where we pooled data across all four States.

B. Key Features of the Study States

We interpreted the findings from these analyses in the State-specific context in which they were observed. The most important programmatic features guiding our interpretations included benefit coverage policies and provider fee schedules.

OBRA-89 was intended to expand the availability and receipt of preventive care among Medicaid-enrolled children through the EPSDT program. However, as we have noted, even before this legislation went into effect, in many States Medicaid children received preventive care outside of EPSDT through the regular Medicaid program--often referred to as the "shadow" program. All four study States had shadow

programs to varying degrees, with Michigan having the largest such program followed by California, Tennessee and then Georgia, where the shadow program was almost nonexistent.

States are mandated to provide a broad range of dental services to Medicaid eligible children under age 21 years to comply with EPSDT requirements. Despite the breadth of the OBRA-89 requirements, across the States included in our analysis, there were variations in coverage of some types of dental services during the study period which could account for some of the State-specific findings detailed in this report.

To strengthen coverage of follow-up services for problems detected during EPSDT screens, OBRA-89 required States to provide all necessary diagnostic and treatment services for such identified problems regardless of their inclusion in State Medicaid Plans. To varying degrees, the study States covered optional Medicaid services. However, all four States placed limits on the amount, duration and/or scope of many mandatory and optional services in their Medicaid programs. In response to OBRA-89, all four States instituted a medical necessity review process to determine, on a case-by-case basis, the need for services beyond those covered in the State Medicaid Plan to treat eligible children.

One of the most critical aspects of the OBRA-89 legislation with respect to providers was the requirement that States set payment rates so as to ensure the availability of obstetrical and pediatric services for Medicaid recipients comparable to that of the general population within the same geographic area. In all four study States, we found Medicaid fees were significantly lower than private fees for both a set of representative children's services and a set of preventive care services. The Medicaid fee generosity index for children's services overall improved slightly during the study period in California and Tennessee, declined somewhat in Georgia, and remained stable in Michigan. In only Michigan did the fee index for preventive care services for children increase between 1989 and 1992.

In general, dental fees under Medicaid in the study States were quite low compared to private sector fees. However, during the study period, Medicaid dental fees increased significantly in Michigan and California. In Georgia, a few small dental fee increases occurred and in Tennessee, there were no changes in dental fees during the study period.

In addition to the State policies directly affecting providers, other aspects of OBRA-89 would indirectly affect provider participation by increasing demand for their services. For example, the eligibility expansions that dramatically increased enrollment during the study period, the provision requiring States to provide all Medicaid-allowed treatment to correct problems identified during EPSDT screens, the change in periodicity guidelines that called for additional preventive services usually at younger ages, and efforts to increase children's EPSDT participation should all increase demand and hence provider participation.

C. Preventive Medical and Dental Services

In this report, we describe our findings on the effects of a variety of factors on four types of preventive care for children. With respect to preventive medical care visits (EPSDT and non-EPSDT combined), EPSDT screening visits alone, and age-appropriate immunizations, according to periodicity guidelines, only children under three years of age were expected to receive these kinds of services during each analysis year. Therefore, these analyses focus on children under three years of age only. In contrast, for preventive dental services, the analyses include only children over the age of three years again based on periodicity guidelines.

1. Change Over Time in the Receipt of Preventive Medical and Dental Services

Overall, our findings indicated that while improvements in the delivery of preventive medical services were evident in 1992 compared to 1989, utilization of preventive dental care demonstrated very little change.

By 1992, across the study States, 49 to 79 percent (adjusted for age, enrollment duration and periodicity guidelines) of the youngest children had a well-child visit--all of them were expected to have at least one such visit. In addition, 33 to 69 percent of scheduled visits for these children were provided in 1992. Likewise, 45 to 61 percent of recommended age-appropriate immunizations were obtained by 1992.

With respect to all well-child visits, EPSDT screening visits and age-appropriate immunizations, when all other factors are held constant, both the probability of any use and number of services received among users significantly increased between 1989 and 1992 in two of the four study States (Georgia and Michigan). Nearly identical results were observed in California. Results for Tennessee were less compelling and inconsistent.

Our descriptive findings with respect to preventive dental services in general showed very low utilization across the four study States. Also, there was little to no improvement in the use of such services over time. By 1992, in California, only 4 percent of children with any dental care had received preventive dental services compared to 23 to 25 percent in Georgia, Michigan and Tennessee. Our findings based on multivariate analyses indicated that in only one State (Tennessee) did both the probability of any use and the number of such services rendered increase significantly over the study period. Ironically, Tennessee was the only State in which there were no changes in dental fees from 1989 to 1992.

We also examined the statistical significance of change over time in primary care provider (or dentist) supply and its effects on preventive medical and dental services. With respect to all well-child

visits, EPSDT screening visits and age-appropriate immunizations, in California only, the effect of increases in the ratio of participating primary care providers to child Medicaid enrollees in the county of residence on the probability of using these services was greater in 1992 versus 1989. In the remaining States, the findings were mixed.

With respect to preventive dental services, in three of four States, the effects of the ratio of dentists to child Medicaid enrollees in the county of residence on both the probability of any use and the number of such services received by users did *not* significantly change between 1989 and 1992. In Tennessee, results were statistically significant, but the negative coefficients suggest that the effect of increases in the ratio of dentists to child Medicaid enrollees in the county of residence on utilization of preventive dental services actually diminished or tapered off over time.

2. Other Factors Affecting Preventive Medical and Dental Service Utilization

In addition to these direct measures of change over time, several other factors had consistent associations with preventive medical and dental care use across States. We highlight the major findings below.

We hypothesized that participation in primary care case management (PCCM) programs would positively affect use of preventive medical and dental care. Data on such participation were available for Michigan and Tennessee. Our hypothesis was not supported. Results were typically not statistically significant, and in some cases, the reverse effect was observed.

Age was important in determining receipt of preventive medical services. Across all four States, compared to toddlers, infants had a higher probability of receiving any well-child visits, EPSDT screening visits alone and age-appropriate immunizations. Also, among users, infants obtained more such services than did toddlers in all four States. These findings are consistent with periodicity guidelines in both 1989 and 1992 which recommended about twice as many preventive care visits for infants than for toddlers (e.g., six versus three, respectively), also providing increased opportunities for vaccination for the youngest age group. These data indicate the need for further improvements among all children under three years of age, emphasizing the continued importance of aggressive outreach and adequate provider reimbursement.

Across all four States, compared to AFDC children under three years of age, blind/disabled children had a lower probability of receiving any well-child visits, EPSDT screening visits alone and age-appropriate immunizations. Results were less consistent for the number of such services received by users in each eligibility category, but when findings were statistically significant, blind/disabled users received fewer of these kinds of services than did their AFDC counterparts. Blind/disabled children

enrolled in Medicaid typically use the health care system to obtain needed diagnostic and treatment services for their specific conditions and may be under continuing care for that purpose. However, it appears that with respect to their preventive medical care needs, among children under three years of age, the blind and disabled are being underserved relative to AFDC children.

In contrast, across all four States, compared to the AFDC group under three years of age, poverty-related children had a higher probability of receiving any well-child visits, EPSDT screening visits alone and age-appropriate immunizations. Also, among users, the poverty-related group obtained more such services than did their AFDC counterparts in all four States. We speculate that this pattern of findings may reflect differences between the AFDC and poverty-related groups in terms of socio-economic status, and perhaps, health care seeking behavior as well.

Currently, many capitated managed care programs under Medicaid serve mainly AFDC populations. As these programs are expanded to include other eligibility groups, most notably the blind/disabled and poverty-related children, the effects on indicators of preventive medical care could change dramatically, depending on the mix of children in these eligibility groups within and across managed care plans. It will be important for on-going program monitoring and outreach purposes to target and track these eligibility groups separately with respect to preventive medical care.

In general, our models that examined factors related to variations in use of preventive dental services rarely showed consistent results across all four States. When coefficients were statistically significant, these models revealed more consistent patterns with respect to the probability of any use than they did with respect to the number of services received by users.

Among children with preventive medical care visits, overall use of preventive dental services was low--one-fourth to one-third of children in three States received both types of preventive care (far less in California). However, our analyses suggested that receipt of well-child visits significantly increased the probability of obtaining any preventive dental care in all four States. As part of the EPSDT screen, OBRA-89 required that the screening provider refer children for a visit to a dentist, or dental professional under the supervision of a dentist, for a dental screening. Based on our data, we speculate that when physicians see children for well-child visits, they sometimes make referrals for dental services, and in turn, some parents of Medicaid children follow up on those referrals. Nonetheless, given low overall utilization rates for preventive dental care, States should devise more aggressive strategies for outreach in general and for ensuring that physicians take every opportunity to make appropriate referrals to dentists.

Consistent variations in the probability of receiving any preventive dental services by eligibility group membership were evident in our regression models. Holding all other factors constant, in at least three States, both blind/disabled and poverty-related children were less likely than AFDC recipients to

have any preventive dental care. The opposite trend was observed for foster care and medically needy/other children compared to the AFDC group.

With respect to age, children between seven to twelve years old in general were more likely than adolescents to obtain preventive dental care, but the youngest children (ages three to six years) had a lower probability of receiving any preventive dental services compared to teens. Finally, in three States, black children were less likely than white children to receive any preventive dental care. Also in three States, females had a higher probability than males of obtaining any preventive dental care.

Exactly why these eligibility, age, race and gender-specific groups had differential use of preventive dental services is not clear from our analyses. Ideally, such service utilization would be high and no group differences would exist. Thus, these findings suggest a need for targeted outreach efforts and careful monitoring for selected groups.

D. Illness-Related Care

In this report, we also describe the effects of a variety of factors on utilization of five types of illness-related services for children. The age groups included in each type of analysis varied. In our analyses of diagnostic and treatment visits as well as prescription drugs, all children under 21 years of age were included. Only children between the ages of one and twelve years were included in our analysis of inpatient care since hospital claims for deliveries (affecting the infant and adolescent age groups) could not be easily identified and deleted. Finally, for both diagnostic and therapeutic dental services, our analysis focused on children over the age of three years since utilization of such services among younger children is extremely rare.

1. Change Over Time in the Receipt of Illness-Related Care

Unlike the results pertaining to changes in the receipt of preventive medical care which were generally significant and positive, the pattern of results regarding change over time in the delivery of illness-related medical services was somewhat mixed. Often, no significant change occurred. When parameter estimates were statistical significant, they were usually positive with one notable exception. The probability of having an inpatient stay among children ages one to twelve years significantly decreased between 1989 and 1992 across all four States. In general, these findings are consistent with State efforts to reduce utilization of costly services. Also, in the short-term, use of preventive services may increase illness-related health care utilization if medical problems that would have otherwise gone unattended are instead diagnosed and treated. The increase in the receipt of preventive services reported earlier may have lead to concomitant increases in some outpatient illness-related services within selected States.

In our descriptive analyses of diagnostic and therapeutic dental services, as with preventive dental services, utilization across States was quite low and there was little to no change over time. For example, the proportion of children with any dental care who also obtained any diagnostic dental services ranged from 18 to 28 percent in both years across States. Similar figures were even lower for therapeutic dental care, ranging from 11 to 14 percent across States and years. Our analyses do not indicate whether these low numbers are due to limited need or restricted access. However, coupled with low utilization of preventive dental care, these trends raise cause for concern.

Our findings based on multivariate analyses were inconsistent with respect to change over time in the receipt of diagnostic and therapeutic dental services. As reported earlier, there was no significant change in the receipt of preventive dental services, except in Tennessee where increases were evident by 1992. Similarly, changes in the receipt of diagnostic and therapeutic dental services over time were often non-significant, or when significant, coefficients were positive with one exception. Tennessee showed decreases in the number of diagnostic and therapeutic services among users by 1992. Thus, OBRA-89 and other legislative initiatives enacted in the early 1990s appear to have had little impact on the receipt of preventive, diagnostic and therapeutic dental services.

In the majority of models, the effects of the ratio of primary care providers (or dentists) to child Medicaid enrollees on both the probability of any use and the number of illness-related services among users did *not* significantly change between 1989 and 1992. That is, for the most part, no improvements or declines in service receipt due to variations in provider supply were evident.

2. Other Factors Affecting Utilization of Illness-Related Services

In addition to these direct measures of change over time, several other factors had consistent associations with illness-related medical and dental care use across States. We highlight the major findings below.

We had expected that participation in PCCM programs would increase utilization of preventive care and thereby increase use of illness-related care at least in the short-term. Similar to the pattern of results observed with respect to preventive medical and dental care, the effects of participation in PCCM programs on utilization of illness-related medical services were mixed.

One important factor related to the use of illness-related medical care is receipt of preventive medical services. We hypothesized that in the short-term, use of preventive medical services would increase health care utilization because identified medical problems that would have been left unattended are instead diagnosed and treated. Results from these analyses were consistent with our descriptive analysis findings. For all three measures of illness-related medical care, across all four States, children

with well-child visits were significantly more likely to receive these services compared to children without well-child visits. In addition, a greater number of diagnostic and treatment visits and prescription drugs were obtained by users of well-child visits in all four States. Among hospitalized children, there was no significant difference between users and non-users of well-child visits in the number of inpatient days received in three of four States.

While we found an inconsistent relationship between race and the receipt of preventive medical services, its association with utilization of outpatient illness-related care was clearer. For both diagnostic and treatment visits as well as prescription drugs, black children were less likely than whites to receive any services, and among users, obtained fewer such services across all four States. Differences in the receipt of inpatient care by race were inconsistent across States. As with age, these findings imply differential access to outpatient illness-related care for blacks versus whites, which may require close monitoring in some States.

One of the most important findings in our analyses was that, overall there is very limited use of all types of dental care among children under Medicaid. For the most part, the other factors affecting utilization of preventive dental services had similar effects on utilization of diagnostic dental services and, to a somewhat lesser extent, on use of therapeutic dental care as well. Relationships between receipt of these dental services and programmatic characteristics such as provider supply/access as well as participation in PCCM programs were inconsistent across States. Use of well-child visits increased the probability of using preventive, diagnostic and therapeutic dental services suggesting that triaging by physicians to dentists is important. Finally, variations by selected eligibility and demographic characteristics again suggest that targeted outreach and on-going monitoring may be necessary to insure adequate service receipt.

E. Total Annual Medicaid Expenditures

We restricted our expenditure analyses to children ages one to twelve years. Infants and adolescents were excluded because of the presence of delivery or pregnancy-related expenditures for these children--our intent was to capture and analyze only illness-related costs. In this section, we highlight the major factors affecting total annual Medicaid expenditures for users of outpatient services only and users of any inpatient care, and discuss the implications for public policy.

1. Change Over Time in Total Annual Medicaid Expenditures

For the most part, we found either no changes or reductions in Medicaid payments during the study period. When all other factors are held constant, among users of outpatient services only, total annual expenditures, adjusted for inflation, were significantly lower in 1992 compared to 1989 in California

and Georgia. The opposite result was obtained for Tennessee, while Michigan experienced no significant change over time. With respect to users of any inpatient care, in California and Michigan total annual expenditures significantly decreased by 1992. For Georgia and Tennessee, there was no change over time. These findings are generally consistent with State efforts to contain costs through a variety of means during the past two decades.

In general, results with respect to the effects of the interaction term of the 1992 year dummy variable with the ratio of participating primary care providers to child Medicaid enrollees on total annual expenditures were mixed for both users of outpatient services only and users of any inpatient care. Findings were either non-significant, or when statistically significant, they were State-specific. Thus, no generalizations are possible with respect to accelerated or diminished effects over time of primary care provider supply/access on expenditures.

2. Other Factors Affecting Total Annual Medicaid Expenditures

As with the utilization analyses, we also examined the effects of other Medicaid programmatic and eligibility characteristics as well as demographics on total annual expenditures. We highlight some of the more critical factors here.

In three of four States (excluding Georgia), increases in the ratio of primary care providers to child Medicaid enrollees were associated with increased total annual expenditures for users of outpatient services only. A similar relationship was found for two States (Georgia and Michigan) with respect to total expenditures among users of any inpatient care. Other measures of provider supply (shortage area and participating clinics per 1,000 population) had inconsistent effects on total expenditures among both users of outpatient services only and users of any inpatient care. Likewise, results with respect to participation in PCCM programs were also mixed.

Use of well-child visits had no impact on total expenditures among users of any inpatient care. Thus, while our utilization analyses generally showed that increases in the use of preventive care medical visits were often associated with increases in the receipt of a variety of other illness-related services, these effects were not translated into increased total annual expenditures, at least among users of any inpatient care.

With respect to demographics, several consistent trends in the data emerged. Younger children tended to have higher total annual expenditures than did older children. Among users of outpatient services only, blacks and females had lower expenditures compared to whites and males, respectively. While the relationship between metropolitan residential status and total expenditures was mixed among users of outpatient services, a clearer pattern was found among users of inpatient care. For such users,

urban and suburban dwellers usually had higher total annual expenditures compared to children residing in rural areas--these variations may be driven at least in part by differences in reimbursement rates for some services by metropolitan status.

Finally, it should be noted that because of differences in State reimbursement policies, analyzing expenditures may be problematic. As a result, utilization analysis provides better insights into the nature and intensity of care provided to children under Medicaid.

II. INTRODUCTION AND BACKGROUND

A. Purpose of Study

The Early and Periodic Screening, Diagnosis and Treatment Program (EPSDT) is an ambitious preventive care program for Medicaid-enrolled children. Added to the Medicaid program under P.L. 90-248 in 1967, EPSDT provides screening and preventive care, as well as services necessary to correct health problems identified through screening. The EPSDT program is generally believed to be effective in identifying, diagnosing and treating health problems. However, its potential for improving the health of Medicaid children has not been fully realized because of low participation rates among both beneficiaries and providers.

Concern over the low reported EPSDT participation rates, coupled with the deteriorating health status of the nation's poor children, led Congress to pass EPSDT-specific provisions in the Omnibus Budget Reconciliation Act of 1989 (OBRA-89). Among other things, the Act created incentives for greater provider participation in EPSDT and broadened the scope of services covered (including preventive and illness-related care). OBRA-89 also mandated that States set up distinct periodicity schedules for screening visits, imposed more stringent reporting requirements for the EPSDT program, and established Federal authority to set State-specific performance standards. By fiscal year 1995, States were to increase participation in EPSDT to 80 percent of all children enrolled in Medicaid. To accomplish this goal, States were expected to reduce the difference between their annual participation rate and the 80 percent goal by one-fifth each year from fiscal year 1990 to fiscal year 1995.

Using multivariate regression techniques, this report describes the results of our analyses that investigate the impact of these legislative initiatives on the provision of preventive services to Medicaid children by analyzing Medicaid enrollment and claims data from four States for calendar years 1989 and 1992. Several descriptive analyses and State-specific case studies have preceded this multivariate analysis. In our earlier work, it became clear that while the Federal legislative initiatives of the late 1980s were aimed at improving the delivery of preventive care through EPSDT, a considerable amount of Medicaid-financed well-child care was provided outside of the EPSDT program through the regular Medicaid program. In addition, through case studies of the study States conducted early in the project, we concluded that the distinction between EPSDT and similar services provided to children through the regular Medicaid program was largely a matter of billing practices as opposed to significant, substantive differences in quality or comprehensiveness of care. Thus, the multivariate analyses described in this report focus primarily on all Medicaid-financed preventive services for children (EPSDT and non-EPSDT combined), not just those services rendered under the official EPSDT program.

We begin our analyses with a general description of the EPSDT program and previous research related to the delivery of preventive care to children. Then we enumerate the issues to be addressed in the report and provide an outline of its organization.

B. The EPSDT Program

Federal law requires that EPSDT programs in every State meet certain minimum requirements. States, however, have considerable flexibility in structuring their EPSDT programs. As a result, the EPSDT program has evolved in numerous and diverse directions across States. Differences exist among States in the administration of the EPSDT program, in the nature and extent of outreach efforts, in the frequency and timing of scheduled screening visits, in the types of providers who are allowed to administer EPSDT screening visits, and in the extent to which Medicaid-covered preventive care for children is performed outside the EPSDT program. All of these features have an impact on the success of the program in reaching and screening Medicaid children.

Roughly half of the States organize their EPSDT outreach and information dissemination around Medicaid eligibility systems housed in local welfare offices. Most other States choose to contract with entities such as Maternal and Child Health and Public Health agencies (Hill and Breyel, 1991). States using the latter approach report a much higher level of satisfaction with program performance and tend to experience more favorable participation rates among Medicaid children.

While the Medicaid statute requires that all families be informed of the availability of EPSDT benefits as they become eligible for Medicaid, States are left to design the processes through which families are told about EPSDT and linked to its services. These processes include informing eligible families during their Medicaid intake process, disseminating brochures at intake and in subsequent mailings, making telephone calls and home visits, referring clients to providers for EPSDT screening visits, scheduling appointments and making transportation arrangements. In their outreach efforts, States typically target certain groups of children, such as all newly eligible children, families expressing interest in EPSDT participation, children due for screening examinations according to the State schedule, children with no program contact, pregnant women, and/or children with a referral for follow-up services after a screen. In addition, these activities are frequently conducted at the county level -- introducing variations even within a State. Participation in EPSDT will vary with the intensity and focus of these efforts.

The heart of the EPSDT program is the provision of basic screening services. The primary vehicle for delivery of these services is the EPSDT full screen which is required to include several components:

- a comprehensive health and developmental history;
- a comprehensive unclothed physical examination;

- appropriate immunizations according to age and health history;
- laboratory tests, including blood lead level assessments appropriate for age and risk factors;
- health education, including anticipatory guidance;
- vision screening;
- hearing screening; and
- dental screening.[1]

EPSDT screening services for Medicaid children must be conducted periodically to identify developmental and health problems. States set up their own periodicity schedules to designate when children of specified ages should receive various screening services, including well-child visits, immunizations, as well as hearing, vision and dental screens. OBRA-89 specified that State periodicity schedules had to meet "reasonable standards of medical and dental practice and be established after consultation with recognized medical and dental organizations involved in child health care." Because outreach activities are frequently tied to these schedules and because prior to OBRA-89 interperiodic screens were often denied reimbursement under Medicaid, the periodicity schedules have significant implications for EPSDT participation and adherence to national well-child care standards.

Prior to OBRA-89, with the exception of dental services, States generally permitted enrollment of medical professionals as EPSDT providers only if they could render the full set of required screening services. It was believed that such provider requirements promoted the "one-stop shopping" ideal and would result in more comprehensive and continuous care. However, these restrictions may also reduce provider availability and thereby reduce EPSDT participation and access to well-child care among Medicaid children.

Many practitioners serving Medicaid children choose to provide screening or preventive services through the regular Medicaid program and do not bill such "well-child care" as EPSDT screens. This practice was referred to as the "shadow" EPSDT program by the Children's Defense Fund. Reasons cited for the practice include a desire among providers to retain their independence and perceptions that State EPSDT reporting and billing requirements are more burdensome than is true for other Medicaid services. Thus, many children may in fact be receiving high quality primary and preventive care services under Medicaid but not through the EPSDT program.

C. Previous Research

In this section, we provide a brief review of the research literature regarding three issues relevant to this study: (1) evidence of the effectiveness of specific program changes to Medicaid and EPSDT in the late

---

[1] See Appendix A for more details on the EPSDT program and dental care.

1980s and early 1990s, (2) factors that influence the receipt of selected components of preventive care, and (3) the impact of preventive care on subsequent use of illness-related services and overall expenditures under Medicaid.

1. Evidence of the Effectiveness of Specific Program Changes to Medicaid and EPSDT[2]

Several studies have examined the impact of policies similar to selected OBRA-89 amendments, particularly with respect to provider participation and payment. The impact of fee levels on physician participation in Medicaid is by far the most studied intervention for increasing beneficiary access to medical care. Two survey studies of pediatricians (Margolis et al., 1992; Perloff et al., 1986) found a positive impact of higher fees on participation in Medicaid. However, another investigation by Fossett et al. (1992) suggests that .increasing participation among physicians already located in inner-city areas through fee increases may not be enough to affect beneficiary access to care when the local physician supply is deficient.. Nonetheless, Adams (1992) found fee increases to be effective in such areas. Finally, three studies estimating the indirect effect of fee levels support a positive impact of higher Medicaid fees on children's access to primary care with a consequent substitution of office-based care for clinic and emergency department care, and a decline in non-primary care and hospitalization (Davidson et al., 1992; Hohlen et al., 1990; Wade, 1992). This evidence from the 1980s on the effect of Medicaid fee levels on children's access to care support many of the findings of an earlier Physician Payment Review Commission (PPRC) report to Congress (PPRC, 1991).

With the exception of provider fees and prepaid managed care (discussed below), little research has been published regarding the effects of other interventions designed to improve provider participation and/or beneficiary access to care. With respect to administrative and benefit policies, Perloff et al (1986) found that pediatricians experiencing delays in payment were more likely to limit their participation in Medicaid and that program eligibility and service expansions increased such participation.

2. Factors Associated with the Receipt of Selected Preventive Services

In this section, we briefly describe the literature concerning factors associated with the receipt of three types of preventive services: well-child visits, immunizations and dental care.

---

[2] Information contained in this section is taken from Gavin, N: *Review and Synthesis of the Literature on the Implementation and Effectiveness of Recent Legislative Initiatives Relating to Medicaid and EPSDT Coverage for Children*, Under HCFA Contract No. 500-92-066, Washington, DC: The MEDSTAT Group, December 15, 1992.

a. *Well-Child Visits*

A number of studies have examined both financial and non-financial factors that affect receipt of well-child visits using the 1987 National Medical Expenditure Survey (Gavin and Bencio, 1996; AHCPR, 1994; Lefkowitz and Short, 1989; Cunningham and Hahn, 1994; Cohen and Cunningham, 1995; Vistnes and Hamilton, 1995). These studies vary in their focus on selected predictor variables and subsamples of children analyzed. By and large, they all point to the importance of insurance coverage and sociodemographic characteristics as determinants of the use of well-child visits. While results based on the 1987 NMES with respect to race and ethnicity are somewhat mixed, in general, families considered to be disadvantaged as represented by sociodemographic factors (e.g., mothers without high school diplomas, families with larger numbers of children under age six years, children living in non-metropolitan areas; single-parent households) often obtain less well-child visits than their counterparts.

Additional studies using a variety of other data sources have also examined receipt of preventive visits among children. Analyses of Medicaid claims data have found lower use of well-child visits among racial and ethnic minorities compared to their white counterparts (Moore and Hepworth, 1994; Lozano et al., 1995).

b. *Immunizations*

One of the most frequently studied components of preventive care for children is immunization status. Immunizations are both efficacious and cost-effective in reducing the incidence of selected diseases in childhood. The Public Health Service has set a goal for the Year 2000 that 90 percent of all two-year-old children will be up-to-date on recommended vaccinations, including at a minimum, receipt of four DTP, three polio immunizations and one MMR--known as the 4:3:1 series (USDHHS, 1990).[3] Using data from the NHIS, the Centers for Disease Control and Prevention (CDC) determined that 67 percent of children ages 19 - 35 months of age had obtained the 4:3:1 series in 1993, up from 55 percent in 1992 (CDC, 1994).

A variety of studies have examined both financial and non-financial barriers to the timely receipt of immunizations. Almost without exception, studies have demonstrated that when financial barriers are removed or reduced (e.g., via insurance coverage, availability of free care and/or lowered out-of-pocket

---

[3] The Healthy People 2000 national goal also includes receipt of one Haemophilus influenzae type b (Hib) conjugate vaccine among at least 90 percent of two-year-olds. Since these national goals were published, recommendations for immunizations have changed--now at least three Hib and three hepatitis B vaccinations (HBV) are expected for children under two years of age. In many analyses, receipt of these two types of vaccines is often examined separately from the traditional 4:3:1 series noted in the text. Inclusion of Hib or HBV vaccinations in these calculations tends to lower the percentage of children who are up-to-date, presumably because recommendations regarding administration of these types of immunizations are somewhat recent.

costs), rates of immunizations improve. However, financial access to preventive care services appears to be a necessary but not sufficient condition for receipt of recommended immunizations (Lieu, et al., 1994). Because our analyses focus on an insured population of children covered by Medicaid, in this review we examine non-financial factors that influence immunization status.

Several studies have identified variations in immunization status by sociodemographic characteristics, parental knowledge and perceptions, and presence/absence of a usual source of care (Gavin, 1996; Moore and Hepworth, 1994; Bates et al, 1994; Lieu et al, 1994; Lannon et al., 1995). As with receipt of well-child visits, sociodemographic factors that characterize disadvantaged families are often associated with lower rates of immunization (e.g., non-white race; Hispanic ethnicity; non-married status, poverty status, larger numbers of children). Lack of a regular physician has been cited as a potential barrier to care. Immunizations may also be delayed when parents do not know when shots are due or when they perceive little or no benefit of medical care to prevent disease.

Other non-financial barriers to timely receipt of immunizations that are provider-driven have also been described in the literature. Recent attention has been focused on missed opportunities for vaccination. The CDC (1994a) defines a missed opportunity as a health care visit during which a child eligible for vaccination on the day of the visit and with no contraindications for vaccination failed to receive the needed dose(s). Reasons for missed opportunities include failing to: (1) assess vaccination status during visits, (2) administer needed vaccines because of the presence of a medical condition inaccurately perceived as a contraindication, and (3) administer needed vaccines simultaneously. Several researchers have found that such missed opportunities can cause delays in receipt of immunizations for some children (Gamertsfelder, et al., 1994; Weese and Krauss, 1995; Hughart, et al., 1994).

c. *Dental Visits*

Despite the many advances in oral health during the 1970s and 1980s, half of all children in the United States continued to have dental caries and to need operative dental services in 1986-1987 (Waldman, 1990; USDHHS, 1989). There is considerable debate in the dental community regarding the appropriate methods for measuring rates of dental caries as well as the degree of success attributable to prevention in the past few decades (Lee and Collins, 1995; Edelstein and Douglass, 1995; Brown et al., 1995). When decay of both primary and permanent teeth are considered, rates worsen making the Healthy People 2000 oral health goal of 65 percent caries-free children at ages 6 - 8 years a significant challenge (Edelstein and Douglass, 1995).

Not all population groups have equal access to oral health advances. A recent review of the literature concluded that, compared to other population groups, the poor and members of racial and ethnic

minorities use dental services less frequently and that, when they do use the system, they are less likely to receive preventive services and more likely to have a dental emergency (Capilouto, 1991). In a more recent analysis using the 1991 National Health Interview Survey, Gavin (1996) also determined that young children from disadvantaged families were less likely than their counterparts to obtain dental care.

A 1990 study conducted by the US Congress' Office of Technology Assessment (OTA) found that there are significant differences among States in the dental services offered children through the Medicaid and EPSDT programs (US Congress, 1990). More recently, the Office of the Inspector General (USDHHS, 1996) found that few eligible children receive preventive dental care through EPSDT (22 percent in 1992 and 20 percent in 1993) and that this problem varies significantly from State to State. Also, while the reasons that few children receive dental care are complex, the OIG identified three primary causes: (1) few dentists serve Medicaid children, (2) Medicaid families give dental services a low priority, and (3) the youngest children are the most difficult to serve and frequently are not screened at all. OTA cited similar causes that are largely parental and programmatic obstacles, including difficulties in accessing transportation to dental providers, lack of education on the importance of dental care and negative attitudes about dentistry, and failure of outreach activities.

Capilouto (1991) found evidence that the availability of dental services to poor populations through Medicaid programs is compromised by low provider participation. Waldman (1994) found that, nationally, the number of pediatric dentists per 100,000 children grew from 4.7 in 1982 to 5.3 in 1991. Of the four study States, the only one with a ratio below the national average by 1991 was Michigan. There were no change in this ratio (3.2) between 1982 and 1991 in that State. While the distribution of professionally active dentists engaging in general practice has become increasingly more uniform over time, this trend has not been observed for dental specialists. OTA also found problems associated with the availability of specialists' services for Medicaid children, including those delivered by pediatric dentists and periodontists (US Congress, 1990). Consequently, underserved populations continue to exist in many States.

Studies have cited several reasons why dentists either do not participate in Medicaid or limit their practices: (1) low reimbursement rates, (2) administrative burden, and (3) general difficulties with serving a disadvantaged population (Venezie and Vann, 1993; Damiano et al., 1990; US Congress, 1990). Specifically, payment denials, need for prior authorization for the plan of care, paperwork burden, lack of conformity with community standards of care, and broken or canceled appointments contribute to low participation rates.

3. The Impact of Preventive Care on Use of Illness-Related Services and Expenditures

In our review of the literature on the impact of preventive care for children on subsequent use of illness-related services, we did not find any studies that assess these relationships directly. That is, we were unable to find reports of sophisticated multivariate analyses that included receipt of preventive care as a predictor of the receipt of illness-related services, controlling for other factors. Thus, we turned to the managed care literature which provides indirect evidence regarding these interrelationships.

Managed care[4] has been proposed as one option for improving access to care for Medicaid beneficiaries. Prepaid managed care arrangements are believed to enhance access to preventive and primary health care and thereby to decrease the use of medical services with little clinical value and/or to promote use of lower cost alternatives (e.g., appropriate substitution of outpatient care for inpatient services).

Hughes et al (1995) conducted a recent review of the literature on Medicaid managed care and its effects on children. Four studies provide the bulk of the evidence on this topic. Two of these studies use data from the Nationwide Medicaid Competition Demonstrations (Carey et al., 1990; Hurley et al., 1989). The other two studies use data from the capitated case management arm of the Suffolk County, NY, Children's Medicaid Program demonstration (Davidson et al., 1992; Hohlen et al., 1990). Based on their review of studies completed to date, Hughes et al. (1995) concluded that use of routine preventive care stays the same or slightly increases under Medicaid managed care arrangements. They also pointed to evidence that managed care has reduced children's use of emergency rooms and specialty physician services, and has shifted children away from clinics and hospital outpatient departments. Hughes et al also noted, however, that there may be no offsetting effects of increased primary care for reduced specialty care and hospital service use.

Taken together, studies of managed care and its effects on children's use of preventive and illness-related care are inclusive. The effects of preventive care on subsequent use of illness-related services cannot be isolated from the effects of managed care participation as a whole.

---

[4] Three types of managed care are often discussed. *Health maintenance organizations* (HMOs) require enrollees to use affiliated physicians who may be salaried employees, paid on a per capita basis or paid for every service rendered. Primary care physicians serve as "gatekeepers" for referrals for hospital care and specialists. *Preferred provider organizations* (PPOs) usually offer their enrollees lower co-payment fees for obtaining care from a network or panel of physicians who are reimbursed at a discounted rate. Finally, under *primary care case management* (PCCM) programs, physician gatekeepers must authorize hospital and specialist services. These gatekeepers may be paid a monthly fee per case that they manage and the services that they provide directly may be partially capitated or paid on a fee-for-service basis.

Finally, with respect to payments, Gavin and Bencio (1996) conducted a multivariate analysis of total health care expenditures for children ages one through 20 years using the 1987 NMES. Children were divided into one of three user groups for this purpose--those receiving: (1) preventive and/or dental care only, (2) illness-related care on an outpatient basis only, and (3) inpatient care. Receipt of preventive care had a significant positive effect on total expenditures for children with outpatient illness-related care only but was not a significant predictor of expenditures among children who had inpatient care. That is, receipt of preventive care increases overall medical costs for children receiving illness-related care in outpatient settings only.

D. Issues/Hypotheses to be Addressed

To understand the impact of OBRA-89[5] on the delivery of preventive care services to children as well as children's use of diagnosis/treatment services and overall expenditures, our objective was to determine the extent to which children were being served and the level and content of their health service use and expenditures before and after the legislated changes were implemented. Because the OBRA-89 legislation was not effective until April 1990, we chose calendar year 1989 as the baseline period for analysis. We estimated it would require at least one year from the effective date (e.g., summer of 1991) for this legislation to be fully implemented. Therefore we chose 1992 as our post-implementation year for analysis. The Medicaid Research Files (Tape-to-Tape database), containing uniform files for California, Georgia, Michigan and Tennessee, served as the study's primary data source. These data were further supplemented with information from the Area Resource File.

The results of the analyses presented in this report will address two major issues concerning the EPSDT program and the impact of OBRA-89 legislation. These include:

- an empirical analysis of the impact, generally, of the Medicaid eligibility expansions, EPSDT programmatic changes, and provider fee increases on receipt of preventive care, use of follow-up diagnostic and treatment services, and receipt of dental services among Medicaid enrolled children; and
- an empirical analysis of factors related to the health service use and health expenditures of Medicaid enrolled children.

These two primary objectives will be addressed through multivariate statistical analyses that will enable us to assess several hypotheses.

---

[5] Although not the focus of this study, it is important to note that OBRA-90 legislation went into effect three months after the effective date for OBRA-89. Except where each legislative initiative made a unique change in EPSDT program policy, it is difficult to determine the differential effects of OBRA-89 and OBRA-90 on outcomes of interest.

Specific hypotheses related to our overall research objectives include:

- After the implementation of OBRA-89, Medicaid enrolled children were more likely to receive preventive care services, diagnostic and treatment services, and dental services.
- Among users of these services Medicaid enrolled children received a greater number of these services after OBRA-89.
- Legislative initiatives such as fee increases that were intended to increase provider participation in the Medicaid program, and in particular the delivery of services to Medicaid enrolled children, increased the likelihood of service use and the intensity of service use through increases in provider supply--and the effect of increases in provider supply increased over time.
- To the extent that the likelihood of service use and the intensity of use increase over time, total annual expenditures per Medicaid enrolled child increased over time.

Other hypotheses related to Medicaid programmatic features included:

- There are statistically significant differences in the likelihood and intensity of service use among the four study States due to State-specific programmatic features.
- Because of better access to diagnosis and treatment services, recipients of preventive care will use more services of all types than non-recipients.
- The longer children are enrolled in the Medicaid program, the greater will be their use of preventive care services.

In addition to these research issues that are explicitly related to legislative and programmatic changes as well as features of the Medicaid program in general, our multivariate analyses will enable us to answer questions about differences in utilization of health care services and expenditures under Medicaid among age groups, racial groups, Medicaid eligibility groups, and urban and suburban versus rural areas.

E. Organization of the Report

The remainder of this report is divided into seven chapters. In Chapter III, we describe our data sources and methodology. Information in this chapter includes a description of the analysis population, analytic file construction and key variables, and general multivariate methodology. In Chapter IV, we present a profile of the study States in terms of the size and composition of the Medicaid child population, provider participation and reimbursement methodologies, as well as periodicity guidelines for selected preventive care services.

The next four chapters contain our detailed multivariate regression analyses. For all dependent measures, we describe the effects of four classes of explanatory variables: (1) direct measures of change over time and provider supply, (2) other Medicaid programmatic and provider supply/access measures, (3) Medicaid eligibility and enrollment characteristics, and (4) demographics and metropolitan residential status.

In Chapter V, our multivariate analyses include an examination of three types of preventive medical care--all preventive medical visits (EPSDT and non-EPSDT combined), EPSDT screening visits alone, and age-appropriate immunizations. In Chapter VI, we describe factors affecting utilization of three types of illness-related medical care--diagnostic and treatment visits, prescription drugs, and inpatient care. In Chapter VII, we present both descriptive and multivariate analyses of dental services under Medicaid including utilization of any dental care, preventive dental services, diagnostic dental services and therapeutic dental care. In Chapter VIII, we present results from our descriptive and multivariate analyses of total annual Medicaid expenditures.

Finally, in Chapter IX we present a synthesis of the major findings across all descriptive and multivariate analyses as well as describe the implications of our results for public policy.

III. DATA SOURCES AND METHODOLOGY

In this chapter, we describe the data sources and methods used in the study. First, we describe the study population. Then, we outline the steps used in constructing the 1989 and 1992 analytic files and how we defined and created selected key variables.

A. Analysis Population

Among the study States, all Medicaid-enrolled children under the age of 21 years are eligible for EPSDT services. Therefore, with the few exclusions noted below, we performed all analyses in this report on all Medicaid children in the four study States who were under 21 years of age during 1989 or 1992. For children who turned 21 years of age during each analysis year, we analyzed data on enrollment and service use patterns only for the months during which they were 20 years of age.

Three groups of children were excluded from the main analyses presented in this report: (1) children residing in institutions, (2) children covered under Medicaid capitated health care plans, and (3) children with dual Medicare and Medicaid coverage. Institutionalized children include recipients of nursing home, ICF-MR or inpatient psychiatric services. We excluded these children because they have dramatically different claims experience compared to those who are not institutionalized. We excluded children who were enrolled in capitated plans, as well as children who were dully enrolled in both Medicare and Medicaid, because they generally have incomplete claims information.[6]

The proportions of the total population of Medicaid enrollees under age 21 which comprised the main analysis populations (1989 and 1992, respectively) were 85 and 82 percent in California, nearly 100 percent in Georgia (both years), 84 and 77 percent in Michigan, and 95 and 93 percent in Tennessee. Institutionalized and crossover children together represented less than one percent of the total population of Medicaid child enrollees across study States and analysis years. With the exception of Georgia (where no capitated plans existed), Medicaid children enrolled in capitated health plans represented 15 and 17 percent of all Medicaid children in California, 16 and 22 percent in Michigan, and 5 and 6 percent in Tennessee, during 1989 and 1992, respectively.

---

[6] Results of analyses examining the enrollment and claims experience of these special child populations are shown in Appendix A of the following report: Herz, E., Sredl, K., and Albers, L: *Trends in the Use of EPSDT and Other Health Care Services by Children Under Medicaid, 1989 and 1992*, Prepared under HCFA Contract No. 500-92-066, Washington, DC: The MEDSTAT Group, March, 1996.

B. Analytic File Construction and Key Variables

Using the Tape-to-Tape database (see Appendix B for a description of this database), for each Medicaid child in the four study States, we created a child-level summary record containing: (1) all data elements from the Tape-to-Tape person summary file, (2) selected variables from the Tape-to-Tape enrollment file, and (3) selected variables summarizing claim-level data on the Tape-to-Tape detailed uniform outpatient file.[7] In the final analytic files for each study State, we retained only information based on Medicaid-paid claims that received federal matching dollars -- that is, we excluded claims for State-only services. We retained Medicaid-paid claims for services rendered by out-of-state providers.

1. Demographics and Medicaid Enrollment Characteristics

With the exception of urban/rural status, we drew demographic information and Medicaid enrollment characteristics for each child in the analytic file from data elements on the person summary and enrollment files. These include age, gender, race, months of enrollment, and Medicaid eligibility group. We assigned children to the Medicaid eligibility group under which they were covered for the greatest number of months for each analytic year. These groups are: (1) SSI disabled, which includes blind and disabled Medicaid children, regardless of cash assistance status or family income; (2) AFDC cash assistance recipients, regardless of whether they qualify as children or adults; (3) foster care children, which includes AFDC Title IV-E children and medically needy child welfare recipients; (4) enrollees qualifying as children or pregnant women (less than 21 years of age) under the poverty-related expansions; and (5) medically needy and other children not otherwise classified, including so-called Ribicoff children.

To categorize children's county of residence as urban, suburban or rural, we merged the 1988 and 1990 Rural/Urban Continuum Code (RUCC) from the Area Resource File developed by the Department of Agriculture to the 1989 and 1992 analysis files, respectively

2. Preventive Medical Care Visits

We developed several measures of preventive care services from the Tape-to-Tape uniform outpatient claims for this study. First, we assumed that all EPSDT claims (those with a Tape-to-Tape category of service value indicating EPSDT) were for preventive services. For the most part, EPSDT claims

---

[7] The Tape-to-Tape supplemental EPSDT health screening file data were analyzed separately and the results are reported in Gavin, N., Bernardin, M., and Schroeder, D: *Health Care Needs and Immunization Status Among Medicaid Children with EPSDT Screening Visits, 1989 and 1992,* Prepared Under HCFA Contract No. 500-92-066, Washington, DC: The MEDSTAT Group, June, 1996.

in each State consisted of screening visits, immunizations, hearing screens, vision screens and laboratory services as defined by procedure codes.

We identified preventive services on non-EPSDT claims (those with a Tape-to-Tape category of service value indicating something other than EPSDT, such as physician, other practitioner, OPD, etc.) based on specific procedure codes alone or procedure codes in combination with specific diagnosis codes. Twenty-two types of preventive services were defined in this manner.[8] We selected these types of preventive services for inclusion in the analytic files because they represent the variety of screening services potentially offered by State EPSDT programs.[9] In general, based on these procedure and diagnosis codes, we classified each non-EPSDT outpatient claim in the 1989 and 1992 files as either preventive in nature or not, and if preventive, then also according to type of preventive service.

For selected analyses, all children were divided into users and nonusers of preventive care visits. This distinction was based on the presence of at least one claim designated as either an EPSDT full screening visit[10] or a non-EPSDT well-child visit (via procedure and diagnosis codes as described above).

3. Immunizations

For the 1989 analyses, for both EPSDT and non-EPSDT services, we examined five types of standard immunizations, including:

- diphtheria, tetanus and pertussis (DTP);
- oral polio (OPV);[11]
- measles, mumps and rubella (MMR);
- hemophilus influenza type b (Hib); and

---

[8] These 22 preventive service categories included: visits; developmental assessment screening; standard immunizations; other immunizations; hearing exams/screening; vision exam/screening; hemoglobin/hematocrit; urinalysis; TB test; sickle cell test; chlamydia/GC culture; PKU test; pap smear; VDRL; lead exposure test; contraceptive visits; other contraceptive care; prenatal care--global fee visits; prenatal care--fee for service visits; other prenatal care; other lab/exam; and anticipatory guidance.

[9] Lists of the specific diagnosis and procedure codes by type of service, State and year are available in Appendix B of Herz, E., Sredl, K., and Albers, L: *Trends in the Use of EPSDT and Other Health Care Services by Children Under Medicaid, 1989 and 1992*, Prepared under HCFA Contract No. 500-92-066, Washington, DC: The MEDSTAT Group, March, 1996.

[10] See Appendix C in this report for a description of our methods for distinguishing full from partial screens under EPSDT.

[11] When applicable in rare circumstances, inactivated polio virus (IPV) vaccinations were also included here.

- tetanus-diphtheria (Td).

For the 1992 analyses, one standard immunization--hepatitis B (HBV)--was added to this list.

Unique procedure codes existed for the triple-injection combinations of DTP and MMR vaccinations. However, there were also procedure codes representing various double-injection sub-combinations (e.g., DT, MR and RM). In addition, procedure codes for single components of these vaccinations were also present (e.g., D only, T only, P only, M only, R only).

Legitimate medical reasons exist for administering only selected components of these DTP and MMR immunizations to certain children. The most common example is administration of DT only to children six years of age and under when the physician decides that the pertussis (P) component is contraindicated on a given visit.[12] Because we did not want to penalize States when such circumstances occurred, we counted the following double- and triple-injection combinations as DTP and MMR immunizations, respectively: (1) DTP = DTP + DT, and (2) MMR = MMR + MR + RM.[13] In addition, when overlapping dates of service are present for at least two single-injection claims (e.g., one claim for D only and another claim for T only, both rendered on a single date), we included these sets in the counts of DTP and MMR vaccinations, as appropriate. However, we did not count stand-alone, single-injection claims.

4. Diagnosis/Treatment Visits and Other Illness-Related Medical Services

We also constructed measures of selected illness-related medical services. Among non-EPSDT claims in the Tape-to-Tape uniform outpatient files designated as non-preventive are those with visit procedure codes and no preventive diagnosis codes. We classified these visits as diagnosis/treatment visits. Variables for other illness-related medical services were taken directly from the Tape-to-Tape person summary files. For the analyses presented in this report, these services include inpatient care and prescription drugs, as well as total Medicaid expenditures for all health care services combined.

5. Dental Services

In the Tape-to-Tape data base, dental claims are maintained in a separate file. For each child in our analytic files, using procedure codes on dental claims, we created flags for any use and count measures for

---

[12] Personal communication, Charles Homer, MD, Assistant Professor of Pediatrics, Harvard Medical School, and Director of Medical Effectiveness Research, Children's Hospital, Boston, MA, September 30, 1993.

[13] For some States, the EPSDT claim form used check boxes to indicate immunizations given during a screening visit, and DTP and Td were often combined under one check box (DTP/Td). For children ages 13-20 years, we assumed that a check in a combined DTP/Td box was for a Td injection.

four categories of dental services: all dental, preventive, diagnostic and therapeutic. Appendix A describes the types of procedures that comprise these dental categories.

6. Provider Supply/Access: Supplemental County-Level Variables

To each child-level summary record in our analytic files, we constructed and appended four county-level measures representing provider supply/access. Two of these measures -- residence in a county designated as a primary care shortage area and participating clinics per 1,000 population -- were taken directly from the Area Resource File. The remaining two measures utilized counts of participating primary care providers and participating dentists by county from a provider analysis also conducted under this contract (reported under separate cover). Two County-level ratio measure were created using these counts as numerators and the total child Medicaid population as the denominator in both cases.

C. General Multivariate Methodology

Our general methodology for analyzing health service use and expenditures for children enrolled in the Medicaid program was to estimate a series of models using several dependent measures. As discussed earlier in this report, our primary objective was to estimate the impact of the OBRA-89 legislation on the likelihood and intensity of service use as well as total annual expenditures, controlling for a variety of factors. For the measures of service use, we specified a dependent variable indicating whether the child had received at least one service in the relevant service category. To analyze intensity of use, the dependent measure was the number of services, days or visits in the relevant service category. Categories of service included: preventive medical care visits, EPSDT screening visits, immunizations, diagnosis and treatment visits, prescription drugs, inpatient care, all dental services , and diagnostic, preventive, and therapeutic dental services separately.

We conducted State-specific and pooled analyses--across States and over time--using a random sample of Medicaid enrollees rather than the entire child Medicaid population in each State. In the analyses for which we pooled data for all four States, we included a dummy variable for each State--Georgia, Michigan, and Tennessee--to assess differences among States. California was the excluded State dummy variable; therefore, comparisons were made with respect to this State. For the analyses in which we were assessing changes over time, the focus of our evaluation of the impact of OBRA-89, we pooled 1989 and 1992 data and included a dummy variable for 1992 as well as an interaction term to assess the impact of changes in provider supply over time. Because the analyses over time are those which allow us to make some assessment of the impact of legislative changes, it is the results from the estimation of the pooled models that we report and discuss in detail in the following chapters. We briefly discuss our findings from the estimation of models where we pooled data across all four States.

1. Model Specifications and Estimation Strategy -- Utilization of Health Services

To model the behavior underlying the utilization of health services, we used a two-part model that separates the decision to seek care from the decision on the amount of care to receive. The first equation of the two-part model was a logistic equation for the dichotomous event of having any service use:

$$\Pr(I_i = 1) = \phi_1(x_1\beta_1)$$

where $I_i = 1$ if $USE_i \geq 0$ and $I_i = 0$ if $USE_i = 0$. The second equation of the two-part model is used to estimate the level of services, given $I_i = 1$:

$$USE_i | I_i = 1 = \phi_2(x_i\beta_2).$$

We applied this two part model to all use and count measures that were specified as dependent variables. Thus, we estimated the probability of any use (0,1) using logistic regression and the level of service use using ordinary least squares regression.

The two-part model assumes independence of the two equations representing the decision to seek care and the decision on the amount of care to receive. Explanatory measures in this general model included four classes of variables: (1) change over time in general and in provider supply specifically, (2) other Medicaid programmatic and provider supply/access indicators, (3) Medicaid eligibility and enrollment characteristics, and (4) demographics and metropolitan residential status.

2. Model Specifications and Estimation Strategy -- Total Annual Expenditures

To analyze total annual expenditures, we used a four-part model similar to that developed by Duan *et al.* (1983). This model exploits three characteristics of the distribution of medical expenditures: (1) that a large proportion of the population uses no medical services during the year, (2) that the distribution of expenditures among users is highly skewed; and (3) that the distribution of medical expenditures is different for individuals with only outpatient use compared to what it is for individuals with inpatient use.

The first equation of the four-part model is a logistic equation for the probability that a child will receive any (inpatient or outpatient) health services during the year. This equation separates users from non-users and addresses the first and second points. The second equation is a logistic equation for the conditional probability that a user will have at least one inpatient stay, given that s/he has some medical use. This equation separates the user group into two subgroups--users of outpatient only services and users of any inpatient services--and addresses the third point.

The third and fourth equations are specified as models of the total annual medical expenditures of the outpatient only users and users of any inpatient services, respectively. Because we have focused on pooled analyses over time, we adjusted all Medicaid expenditures from 1989 to be expressed in 1992 dollars using the Consumer Price Index for medical care. The same four classes of explanatory variables analyzed in our utilization models were also used in our expenditure models.

IV. PROFILES OF STUDY STATES

In this chapter, we provide a brief overview of the Medicaid and EPSDT programs in the four study States. This overview provides a context in which to understand and interpret the findings from the multivariate analyses presented in the following chapters. (Appendix D contains a more detailed description of each study State.)

A. Size and Composition of the Medicaid Program in Each State

The four Tape-to-Tape States -- California, Georgia, Michigan and Tennessee -- were chosen for this study because of the ready availability of their Medicaid data for use in the research. Although these States are not necessarily representative of all State Medicaid programs, they are among the largest, both in terms of total recipients and total expenditures. In 1992, Medicaid recipients in these four States together comprised almost one-quarter of the US total. Medicaid expenditures in the four States accounted for 17 percent of the total for the United States.

The AFDC and medically needy monthly income eligibility levels varied considerably across the four States during the study period. California's income eligibility thresholds were near the federal poverty level (FPL) and remained the highest among these States for both 1989 and 1992. Michigan had income thresholds ranging between 60 to 70 percent of the FPL. In Georgia, these thresholds were much lower, at about 39 to 50 percent of the FPL. Finally, within each category of eligibility (AFDC versus medically needy), Tennessee had the lowest income levels of the four study States, ranging from 26 to 47 percent of the FPL.

Between 1989 and 1992, a series of Medicaid eligibility expansions were mandated or permitted, all of which allowed coverage of various groups of pregnant women and children defined by age and family income as a percentage of the federal poverty level. That is, the strict tie between welfare recipiency and Medicaid eligibility was broken for specified groups of women and children. Between 1989 and 1992, the study States adhered to mandated changes and implemented most of the optional expansions, but at different points in time.

Medicaid enrollees under the age of 21 years represent 53 to 60 percent of the Medicaid population in each of the study States (see Table IV-1). Between 1989 and 1992, the growth rate in the child Medicaid populations was considerable for each State except Michigan. Georgia experienced the greatest increase in its child Medicaid population between 1989 and 1992 at 66 percent, followed by Tennessee at 47 percent and California at 42 percent. Michigan's Medicaid child population remained relatively stable with a growth rate of only four percent.

TABLE IV-1

Medicaid Enrollees under Age 21, 1989 and 1992
Four Study States

Study State	1989		1992		
	Number of Enrollees <21	Percent of All Medicaid Enrollees	Number of Enrollees <21	Percent of All Medicaid Enrollees	Number of Enrollees <21 Percent Change: 1989 to 1992
California	2,065,719	55	2,923,913	56	42
Georgia	358,838	57	597,245	60	66
Michigan	598,296	59	624,662	58	4
Tennessee	312,570	53	458,588	55	47

Source: Analysis of Tape-to-Tape Data, 1994.
Note: Data exclude persons enrolled in capitated plans, persons residing in institutions, and persons with dual Medicare and Medicaid coverage.

Much of the growth in the child Medicaid population within each study State was due to increases in enrollment among specific eligibility groups. Across States there were substantial increases in poverty-related enrollment, and to a lesser extent, blind/disabled enrollment–trends that are consistent with federally mandated changes in eligibility during this period. The medically needy/other group also showed fairly large increases between 1989 and 1992 for California and Georgia only. Some of the variations in eligibility patterns by State were related to varying income thresholds and expansion implementation dates (discussed in greater detail in Appendix D).

B. Provider Participation and Reimbursement Rates

In all four study States, the local social service/welfare departments administer the AFDC and Medicaid eligibility processes and thus are responsible for informing families with children about the basic benefits of the EPSDT program. Staff from local health departments are responsible for outreach.

Provider participation in EPSDT and reimbursements for EPSDT services as well as non-EPSDT preventive care for children changed over time and varied across the study States. In California, public and private providers participate in the State's EPSDT program. Although private physicians, mostly in group or solo practices, comprise approximately 80 percent of all EPSDT providers, they are responsible for about half of all EPSDT examinations. County health departments, schools, and community clinics are among the public sector providers that perform the other half of screening exams. During the study period, California's reimbursement rates for EPSDT exams varied according to the age of the child, and whether the patient was new. Rates also varied according to whether the provider had the capacity to render a comprehensive set of services (including screening, diagnostic, and treatment); or was able to render only the required screening

services. Providers who delivered well-child care outside of EPSDT through the regular Medicaid program were reimbursed at lower rates.

Although participation in Georgia's EPSDT program was open to both public and private providers, State officials report that the number of private physicians involved with EPSDT was small in 1989. This low participation rate is attributed to two factors -- a historical tension between local health departments and private providers, and outdated physician perceptions of the EPSDT program (e.g., that the claims payment process is slow and cumbersome). Unlike California, Georgia does not allow a "shadow" EPSDT program. Providers are not reimbursed for well-child care unless claims are submitted through the EPSDT system (although any Medicaid provider may bill for immunizations). It is believed, however, that unreimbursed well-child care occurs in this State. Georgia's reimbursement rate for EPSDT exams was higher than the Medicaid rate for a comparable routine office visit.

In 1989, unlike most of the other States, Michigan's local public health departments were almost exclusively the only comprehensive EPSDT screening providers. In fact, private physicians were not permitted to become EPSDT providers in Michigan until 1986. Never more than 50 physicians statewide have ever received certification as comprehensive EPSDT providers. The State public health department, which certifies comprehensive EPSDT providers, required private physicians to meet the same standards traditionally imposed upon health departments. Basically, these standards specified the protocol to be followed, the equipment to be used and the staff required to carry out EPSDT screens. Few private providers have been willing to satisfy these requirements.

By 1992, the EPSDT provider pool in Michigan was greatly expanded by virtue of the addition of the "basic" screen under EPSDT. In this case, office-based physicians continued to provide usual well-child visit services to Medicaid children, but now these visits were counted as EPSDT basic screens. The provisions for comprehensive EPSDT providers were still in place and continued to include local health departments and a very small group of physicians. Also by 1992, fees for both types of EPSDT screens had increased over 1989 levels.

Given this situation, the Michigan Medicaid program has traditionally paid for a great deal of well-child care outside the EPSDT system, according to State officials. This situation in Michigan is highly unusual, and makes the "shadow" program there enormously important, especially in 1989.

Both staff in local health departments and private physicians participated in Tennessee's EPSDT program in 1989 and 1992. However, there was not much of a financial incentive for private providers to qualify as EPSDT providers, since the reimbursement rates for EPSDT were not significantly higher than the rates for a routine office visit under the regular Medicaid program. Like Georgia, Tennessee officials reported that State regulations did not permit a "shadow" program of well-child visits. However, officials also indicated

that their claims processing system was not structured to reject Medicaid claims for well-child care outside the EPSDT program.

Michigan Medicaid allows providers to perform and bill for individual procedures (e.g., hearing tests and immunizations); however, these services are not considered part of the EPSDT program and are not tracked as partial EPSDT screens. The Medicaid programs of both Georgia and Tennessee have denied requests from providers such as audiologists and therapists to become EPSDT partial screening providers; however, both programs do allow EPSDT providers to bill separately for individual procedures not performed as part of a comprehensive screen. In Georgia, partial screening visits were largely composed of immunizations and vision screens. In Tennessee and California, partial screening visits included a broader set of services. California allowed billing for partial screens prior to the passage of the OBRA-89 legislation.

C. Periodicity Guidelines for Well-Child Visits and Immunizations

Under the EPSDT program, States are required to develop and disseminate periodicity schedules[14] that outline at what ages and time intervals specific kinds of preventive or screening services are to be delivered to children. The federal regulations do not require that a common national standard be followed by all States. As a result, there were important differences between the American Academy of Pediatrics (AAP) recommendations regarding the timing and frequency of well-child visits by age group compared to the State-specific EPSDT periodicity schedules for the analysis years. These guidelines dramatically affect utilization rates and provide a context in which to understand and interpret the multivariate analyses described in this report.

According to the AAP for both 1989 and 1992, a total of 20 visits was recommended from birth through age 20 years at the following intervals:

- children up to 1 year of age should receive a total of 6 visits at 2 - 3 month intervals;
- those aged 1 - 2 years should receive a total of 3 visits at 15, 18 and 24 months;
- children ages 3 - 5 years should have a total of 3 annual visits; and
- those at 6 years of age and above should have a total of 8 visits, one every other year.

---

[14] Recommended guidelines for dental services under EPSDT follow a somewhat stricter set of Federal regulations. State-specific periodicity schedules for such services were not included in dental provider manuals obtained for this study. Thus, we assumed the detailed Federal guidelines applied across States during the study period. Appendix A describes the EPSDT program and dental care, and includes an overview of these Federal guidelines.

Georgia was the only study State to apply the AAP guidelines to its Medicaid child population for both 1989 and 1992. In general, when State EPSDT periodicity schedules differed from AAP guidelines, the States recommended fewer visits for selected age groups, usually older children.

For the four States included in this study, there were also differences in the recommended ages and time intervals for the administration of selected immunizations (especially in 1992). In 1989, the AAP schedule for common childhood immunizations recommended that:

- infants up to six months of age should receive three doses of the diphtheria-tetanus-pertussis (DTP) vaccine and two doses of an oral polio vaccine (OPV) at two-month intervals;
- between 15 and 18 months of age, toddlers should receive an additional DTP and OPV, plus single doses of the measles-mumps-rubella (MMR) and the haemophilus influenza type b (Hib) vaccines;
- children between the ages of four and six years should receive a fourth dose of DTP and a third OPV;
- pre-teens (ages 11 and 12 years) should receive a second MMR; and
- adolescents between the ages of 14 and 16 years should receive a tetanus-diphtheria (Td) booster.

For 1989, in contrast to the periodicity schedules for well-child visits described above, there were few variations from the AAP guidelines among the four State-specific schedules for the five common childhood immunizations.

By 1992, the AAP had made two modifications to its guidelines for common childhood immunizations, as follows:

- One new immunization--the Hepatitis B vaccine (HBV)--was added to the set of standard vaccinations recommended for all children. Three doses of HBV were to be administered at birth,[15] 2 months and 18 months of age.
- Of the original set of five common immunizations, the AAP changed its guidelines for only one--the Hib vaccine. While a single dose of Hib was recommended at 18 months of age in 1989, by 1992, the AAP was recommending a three-dose series[16] at 2, 4 and 15 months of age.

---

[15] Although the AAP recommended a HBV injection for newborns during the delivery hospitalization, for analytic purposes, we examined only HBV immunizations by 2 and 18 months of age in 1992 for several reasons. Such injections are unlikely to be identifiable in the Tape-to-Tape files used for this study. Also, capturing HBVs administered at birth would have required identification of inpatient facility claims for delivery and accompanying attending physician claims (if any) for related professional services (including HBV injections), all of which was beyond the scope of this project.

In general, when differences existed between State-specific and AAP periodicity guidelines, the State schedules (for California 1989 and 1992, and Georgia 1992) required earlier administration of selected immunizations than the AAP recommended schedule. These State schedules were more stringent than AAP guidelines; that is, for a child below 7 years of age, the State schedules required more immunizations, sometimes at shorter intervals.

[16] Only two types of Hib vaccines were approved by the AAP for children under 15 months of age. One vaccine required a three-dose series, while the other vaccine required a four-dose series (additional injection at 6 months of age). To simplify our analyses, for all children, we assumed use of the three-dose schedule for the Hib in 1992.

V. USE OF STANDARD WELL-CHILD CARE

In this chapter, we describe our findings with respect to selected well-child services--specifically, preventive care visits (EPSDT and non-EPSDT combined), EPSDT screening visits alone and total age-appropriate immunizations. For each type of well-child service, we begin with a summary of our descriptive analyses.[17] Then, for each dependent measure, we summarize the findings from pooled multivariate models in which both years are combined for each State. Logistic regression is used to examine the probability of using each well-child service. In addition, we use ordinary least squares regression to examine the intensity of service receipt among users of each well-child service. We describe all multivariate results with respect to four major classes of explanatory variables: (1) direct measures of change over time and provider supply, (2) other Medicaid programmatic and provider supply/access measures, (3) Medicaid eligibility and enrollment characteristics, and (4) demographics and metropolitan residential status.

While not reported in this chapter, we estimated models in which we pooled data from all States using all dependent variables. Using dummy variables for Georgia, Michigan, and Tennessee to assess differences among States and in comparison to California, we found statistically significant differences across all models with the following exceptions: (1) in 1992 for the probability of receiving preventive care medical visits, Michigan was not different from Georgia, (2) in 1992 for the probability of receiving age-appropriate immunizations, Georgia and Tennessee were not different from California, and (3) in 1989 for the number of immunizations among users, Georgia was not different from California.

A. Summary of Trends from Descriptive Analyses of Standard Well-Child Care

In the descriptive analyses conducted for this project, we computed EPSDT participation rates and screening visit rates for the four study States for both 1989 and 1992[18]. These rates were computed based on both State-specific periodicity schedules and a national standard periodicity schedule -- the American Academy of Pediatrics (AAP) schedule for well-child visits. In addition, we computed separate rates that combine EPSDT screening visits with preventive care visits children had under Medicaid but outside the EPSDT program. Then, to determine whether the States were reaching equally all enrolled children or whether the States were more or less successful with certain subgroups of children, the results were broken out by age group, eligibility category, gender, race and residential location by metropolitan status.

---

[17] Herz, E., Sredl, K., and Albers, L: *Trends in the Use of EPSDT and Other Health Care Services by Children Under Medicaid, 1989 and 1992*, Prepared Under Contract No. 500-92-066, Washington, DC: The MEDSTAT Group, March, 1996.

[18] See Appendix E for a description of the methods we used to calculate participation and visit rates for our descriptive analyses.

Our descriptive findings were somewhat mixed with regard to how successful States were in providing children with preventive care services:

- Adjusting for Medicaid enrollment duration and the age-based AAP guidelines for screening visits, between 1989 and 1992 in three of four study States (excluding California), there were slight to moderate improvements in corresponding participation and visit rates for EPSDT screens alone and in combination with well-child visits provided through the regular Medicaid program. Rates in California remained basically the same over time.

- Nonetheless, by 1992, the study States were still reaching less than half (39 to 42 percent) of the children expected to receive an EPSDT screen and were providing less than half (35 to 42 percent) of the recommended number of screens. When well-child visits rendered outside of EPSDT were also considered, 43 to 54 percent of children had at least one visit and 36 to 59 percent of scheduled visits were received.

- A considerable number of well-child visits were received and billed through Medicaid but outside of EPSDT in both 1989 and 1992 in the three study States that allowed payment for such visits. The extent to which well-child visits were received outside of EPSDT in Georgia is unknown because the State did not allow payment for these services, and therefore they do not show up in the claims data files. However, the provision of unreimbursed well-child care is believed to occur in Georgia.

Overall, the observed gains occurred in spite of the fact that there was considerable growth in the Medicaid child population in three of four study States (excluding Michigan) by 1992. Enrollment for Medicaid children grew by 42 to 66 percent in California, Georgia and Tennessee. Only in Michigan did such enrollment remain relatively stable with a four percent increase by 1992. With this level of growth, States should be commended for holding steady, much less achieving some improvements in the delivery of preventive care to children under Medicaid. However, given progress by 1992, each State faced a significant challenge in meeting the FY-1995 EPSDT participation goal of 80 percent set by the Secretary of Health and Human Services. In fact, our data suggest that this goal was, in all likelihood, not achieved.

In our descriptive analyses, we also examined the extent to which Medicaid children were receiving the recommended number of immunizations for their age group in 1989 and 1992, and the extent to which these immunizations were received through EPSDT. Compliance with immunization periodicity schedules is important to ensure an adequate antibody response to each vaccine and the earliest possible protection from preventable childhood diseases.

Our descriptive analyses indicate that the study States were moderately successful in immunizing Medicaid children against common childhood diseases. The major findings are highlighted below:

With respect to all children:

- In 1989 and 1992, in three of four study States (excluding Michigan), the majority of Medicaid-financed immunizations received by Medicaid children was provided through the EPSDT program.

- The effects of shadow programs on rates of immunization mirrored the effects found for rates of well-child visits reported above. That is, the larger the shadow program, the greater the improvement in overall immunization completion rates compared to similar rates computed for EPSDT services alone. The most dramatic effects of this nature were observed for Michigan in both 1989 and 1992.

- In 1989, children received one-half to two-thirds of recommended immunizations through the Medicaid program across the study States. By 1992, these rates had improved such that 68 to 80 percent of scheduled vaccinations were provided.

- When only age-appropriate immunizations were considered, completion rates were lower. About one-third to one-half of recommended age-appropriate immunizations were provided in 1989. Comparable 1992 figures ranged from 48 to 61 percent.

With respect to variations by age group:

- Children in the three to six year old age group had the highest immunization completion rates regardless of the method of computation. Age-appropriate rates for this group ranged from 67 to 86 percent for all immunizations in 1989 and 86 to 92 percent in three of four study States (excluding California) by 1992. The high rates among children in this age group are very likely related to medical requirements for school entry which undoubtedly serve as a strong motivator for both parents and providers.

- Infants had some of the lowest completion rates, receiving less than one-half of all recommended immunizations in 1989, but improving to 47 to 61 percent by 1992. Infants also had the most demanding schedule of immunizations which could account for their often low rates vis-a-vis other age groups.

During the period of this study, not only was there an increasing amount of public attention given to children's immunization status, but such services became more widely available through a variety of funding mechanisms accessible to all families regardless of insurance coverage or ability to pay. Thus, our analyses based on Medicaid claims data only may somewhat underrepresent total immunization completion rates for Medicaid-enrolled children.

B. Preventive Care Visits-Multivariate Analyses

We focus our multivariate analysis on children under three years of age since AAP periodicity guidelines in effect during both 1989 and 1992 recommended at least one annual well-child visit for such children. Thus, the analysis includes only those children for whom at least one well-child visit was expected.

Two measures of change over time are included in all our pooled models--a dummy variable for the analysis year and an interaction term for this year dummy by the ratio of participating primary care providers to child Medicaid enrollees in the county of residence. These pooled models permit the direct examination of change over time in general and whether changes over time in primary care provider supply/access in particular affect the probability of receiving any well-child visits or, among users, the number of such visits received.

1. Highlights of the Pooled Multivariate Results for Preventive Care Visits

Many of the same factors that influenced the probability of receiving any preventive care visits among all children under three years of age also determined the frequency of well-child visits among users.

With respect to direct measures of change over time and provider supply:

- In two States (Georgia and Michigan), there was a significant increase in the probability of any use of preventive care visits in 1992 compared to 1989. In three of four States (excluding Tennessee), there was also a significant increase in the number of preventive care visits among users in 1992 compared to 1989.

- In California, the effects of increases in the county-level ratio of participating primary care providers to child Medicaid enrollees on the probability of receiving any well-child visits were greater in 1992 compared to 1989. However, in Tennessee, while increases in this ratio were associated with the lower probability of having a well-child visit in general, by 1992, this inverse relationship was weakened. In Michigan there was no relationship between this ratio and the number of preventive medical care visits in 1989, but by 1992 increases in this ratio were associated with more strict visits among users. Finally, in Tennessee, the effects of increases in this ratio on the number of well-child visits among users was enhanced in 1992 compared to 1989.

With respect to other Medicaid programmatic and provider supply/access measures:

- In three of four States (excluding Georgia), children living in counties that were designated as primary care shortage areas had a lower probability of receiving any preventive care visits than children residing in non-shortage areas. Likewise, in California and Georgia, residence in a shortage area was associated with a decreased number of preventive care visits among users. However, the opposite effect was observed in Tennessee.

- In the two States (Michigan and Tennessee) for which data on months of enrollment in a PCCM program were available, this factor was not significantly related to the probability of receiving any well-child visits. Also, in Michigan only, the results showed that the greater the number of months of PCCM enrollment, the fewer the number of well-child visits received among users.

With respect to Medicaid eligibility and enrollment characteristics:

- Across all four States, compared to AFDC children, blind/disabled children were significantly less likely to obtain at least one well-child visit. But in only one State (California) did the blind/disabled user group obtain fewer preventive care visits than did their AFDC counterparts.

- Across all four States, poverty-related children were more likely than AFDC children to have a preventive care visit. Likewise, poverty-related children with visits received significantly more such visits than did users classified as AFDC. Further investigation of separate State/year regression models (data not shown) indicate that this pattern of findings was true in 1992 only.

- The effects of the medically needy/other classification were significant in California only. Compared to AFDC children, medically needy/other children were less likely to receive at least one well-child visit. However, among users, the medically needy/other group obtained significantly more such visits than did their AFDC counterparts.

- The effects of the foster care classification were significant also in California only. Compared to their other AFDC counterparts, foster care children were more likely to have any preventive care visits and, among users, obtained a greater number of such visits.

- Across all States, the greater the number of months enrolled in Medicaid within each analysis year, the greater the probability of receiving a well-child visit and the greater the frequency of visits received among users.

With respect to demographics and metropolitan residential status:

- Across all four States, infants were more likely than toddlers to receive at least one well-child visit. Likewise, users under 12 months of age obtained significantly more well-child visits than did users aged one to two years. These findings are consistent with periodicity guidelines in both 1989 and 1992 which recommended about twice as many preventive care visits for infants than for toddlers (e.g., six versus three, respectively).

- In three of four States (excluding Georgia), black children were significantly less likely than white children to have any well-child visits. Similarly, blacks with preventive care visits obtained significantly fewer such visits than did their white counterparts.

- In California only, Hispanic children were significantly less likely than non-Hispanics to receive at least one preventive care visit. Also, among users of well-child visits, Hispanics obtained significantly fewer such visits than their non-Hispanic counterparts, again in California but also in Georgia.

- The pattern of statistically significant results with respect to metropolitan residential status was generally State-specific and in some cases year-specific.

2. Probability of Receiving Any Preventive Care Visits–Pooled Logistic Models

Table V-1 summarizes the results of the pooled logistic regression models examining the probability of receiving at least one well-child visit. (See Appendix F for the accompanying detailed pooled logistic regression tables.)

a. Direct Measures of Change Over Time and Provider Supply

With respect to change over time in general, only in Georgia and Michigan was there a significant increase in the probability of any use of preventive care visits in 1992 compared to 1989. The year by provider supply interaction term was significant and positive only for California and Tennessee, but the interpretation is different. In California, the effect of increases in the ratio of participating primary care providers to child Medicaid enrollees in the county of residence on the probability of receiving any well-child visits was greater in 1992 compared to 1989. However, in Tennessee, while increases in this ratio were associated with a lower probability of having a well-child visit in general, by 1992, this inverse relationship was weakened.

TABLE V-1

LOGISTIC REGRESSION SUMMARY: PROBABILITY OF RECEIVING ANY WELL-CHILD VISITS, CHILDREN UNDER 3 YEARS OF AGE ONLY

POOLED MODEL INCLUDING INTERACTION TERM AND DUMMY VARIABLE FOR YEAR

Dependent Variable: Use/Non-Use of Well-Child Visits				
Regressor *(X)*	California	Georgia	Michigan	Tennessee
Intercept	-	-	-	-
Age < 12 months	+	+	+	+
Black Race	-	+	-	-
Other Race	+			
Unknown Race	-	+		
Hispanic Ethnicity	-			
Gender				
Urban Residence	+	-		-
Surburban Residence	+	-		-
Blind/Disabled	-	-	-	-
Foster Care	+		N/A	
Poverty-Related	+	+	+	+
Medically Needy	-			
Months Enrolled in Medicaid	+	+	+	+
Months Enrolled in a PCCM Program	N/A	N/A		
Shortage Area	-		-	-
Participating Clinics per 1,000 Population	+	+	+	-
Participating Primary Care Providers/Child Medicaid Enrollees	+	-		-
Children with Service Use in both 1989 and 1992	+	+	+	
1992 Year Dummy		+	+	
1992 Year Dummy By Participating Primary Care Providers/Child Medicaid Enrollees	+			+

Plus (+) and minus (-) signs indicate statistically significant coefficients where $p < .05$. Blanks indicate coefficients that are not statistically significant.

N/A Indicates that the variable was unavailable.

Excluded categories: Ages 1 - 2 years, White, Male, Rural, AFDC (AFDC/Foster Care in Michigan), and 1989.

b. Other Medicaid Programmatic and Provider Supply/Access Measures

With the exception of Georgia, children living in counties that were not designated as shortage areas had a higher probability of receiving any preventive care visits than children residing in shortage areas. Increases in the ratio of participating clinics per 1,000 population in the county of residence were positively associated with increases in the probability of receiving any well-child visits in three of four States. The opposite pattern was observed in Tennessee. Finally, results were mixed with respect to the effects on the probability of receiving any well-child visits of the ratio of participating primary care providers to child Medicaid enrollees in the county of residence.

Information on participation in PCCM programs was available in only two States–Michigan and Tennessee. Contrary to expectations, months of enrollment in a PCCM program was not significantly related to the probability of obtaining at least one preventive care visit.

c. Medicaid Eligibility and Enrollment Characteristics

Across all four study States, compared to AFDC children, blind/disabled children were significantly less likely to obtain at least one well-child visit. In contrast, poverty-related children were more likely than AFDC children to have a preventive care visit. Separate State/year logistic models (data not shown) indicated this poverty-related finding was true only in 1992 across States. Only in California did foster care children have a greater likelihood of obtaining a preventive care visit compared to all other AFDC children. Also in California only, the medically needy/other group was significantly less likely than the AFDC group to have received any well-child visits.

With respect to enrollment duration, across all States, the greater the number of months enrolled in Medicaid within each analysis year, the greater the probability of receiving a well-child visit. We also identified children with any Medicaid service use in both 1989 and 1992 as a proxy for long-term enrollment. In three of four States (excluding Tennessee), this measure was positively associated with any use of preventive care visits.

d. Demographics and Metropolitan Residential Status

In all four States, compared to toddlers (ages 1 - 2 years), infants (< 12 months of age) were more likely to receive at least one well-child visit. This finding is consistent with the fact that periodicity guidelines in both 1989 and 1992 recommended about twice as many preventive care visits for infants than for toddlers (e.g., six versus three, respectively). Gender was not significantly related to receipt of any well-child visits.

Findings with respect to race and ethnicity across States were somewhat complex. In three of four States, blacks were significantly less likely than whites to have any well-child visits. In Georgia, the opposite pattern was observed. The two additional race classifications (other and unknown race) did not show consistent trends across States which may be due at least in part to unreliable coding. Finally, for California only, Hispanics were significantly less likely than non-Hispanics to have obtained at least one preventive care visit.

The pattern of findings with respect to metropolitan residential status was generally State specific. That is, in the two smallest States--Georgia and Tennessee--children who resided in urban and suburban locales were less likely than children living in rural areas to have received any preventive care visits. The opposite pattern was observed in California. Results in Michigan were non-significant.

3. Number of Preventive Care Visits Among Users--Pooled Linear Models

Table V-2 summarizes the results of the pooled linear regression models examining the number of well-child visits received among users. (See Appendix G for the accompanying detailed pooled linear regression tables.)

a. *Direct Measures of Change Over Time and Provider Supply*

With respect to change over time in general, in three of four States (excluding Tennessee), there was a significant increase in the frequency of preventive care visits in 1992 compared to 1989. The year by provider supply interaction term was significant and positive only for Michigan and Tennessee. In Tennessee, the effect of increases in the ratio of participating primary care providers to child Medicaid enrollees in the county of residence on the frequency of well-child visits among users under three years of age was greater in 1992 compared to 1989. In Michigan, while there was no relationship between this ratio and the number of well-child visits in 1989, by 1992 increases in this ratio were associated with more such visits among users.

b. *Other Medicaid Programmatic and Provider Supply/Access Measures*

Three county-level measures were included in our analyses to examine the effects of provider supply/access on the number of preventive care visits among users under three years of age. Results were mixed across States. In California and Georgia, users living in counties that were not designated as primary care shortage areas received more preventive care visits than children with visits residing in such shortage areas. The opposite results were observed in Tennessee. In California and Georgia, the ratio of participating

TABLE V-2

ORDINARY LEAST SQUARES REGRESSION SUMMARY: NUMBER OF WELL-CHILD VISITS, USERS UNDER 3 YEARS OF AGE ONLY

POOLED MODEL INCLUDING INTERACTION TERM AND DUMMY VARIABLE FOR YEAR

Dependent Variable: Number of Well-Child Visits				
Regressor *(X)*	California	Georgia	Michigan	Tennessee
Intercept		+		
Age < 12 months	+	+	+	+
Black Race	-	+	-	-
Other Race	+			
Unknown Race	+			
Hispanic Ethnicity	-	-		
Gender				
Urban Residence	+	-	+	-
Surburban Residence	+	-		+
Blind/Disabled	-			
Foster Care	+		N/A	
Poverty-Related	+	+	+	+
Medically Needy	+			
Months Enrolled in Medicaid	+	+	+	+
Months Enrolled in a PCCM Program	N/A	N/A	-	
Shortage Area	-	-		+
Participating Clinics per 1,000 Population	+	+		-
Participating Primary Care Providers/Child Medicaid Enrollees	+			+
Children with Service Use in both 1989 and 1992				
1992 Year Dummy	+	+	+	
1992 Year Dummy By Participating Primary Care Providers/Child Medicaid Enrollees			+	+

Plus (+) and minus (-) signs indicate statistically significant coefficients where $p < .05$. Blanks indicate coefficients that are not statistically significant.
N/A indicates that the variable was unavailable.
Excluded categories: Ages 1 - 2 years, White, Male, Rural, AFDC (AFDC/Foster Care in Michigan), and 1989.

clinics per 1,000 population in the county of residence was positively related to the number of well-child visits among users under age three years. The opposite was observed in Tennessee. In California and Tennessee, increases in the ratio of participating primary care providers to child Medicaid enrollees in the county of residence were associated with more frequent well-child visits among users.

Information on participation in PCCM programs was available in only two States--Michigan and Tennessee. We hypothesized that such participation would increase use of well-child services. In contrast, months of enrollment in a PCCM program was negatively related to the number of well-child visits among users under three years of age in Michigan (true in 1992 only according to separate State/year linear regressions not shown here).

c. Medicaid Eligibility and Enrollment Characteristics

Across all four States, poverty-related children with visits received more such visits than did users classified as AFDC. Additional statistically significant results with respect to Medicaid eligibility groups were observed only in California. For example, blind/disabled users obtained significantly fewer well-child visits than did their AFDC counterparts. Foster care children with visits obtained more preventive care visits than did all other AFDC children with visits. Finally, the medically needy/other user group had significantly more preventive care visits compared to AFDC children with visits.

With respect to enrollment duration, across all States, the number of months enrolled in Medicaid within each analysis year was significantly and positively related to the number of preventive care visits among users under three years of age. We also identified children with any Medicaid service use in both 1989 and 1992 as a proxy for long-term enrollment. This measure was not significantly related to the number of well-child visits.

d. Demographics and Metropolitan Residential Status

Compared to toddlers (ages 1 - 2 years) with visits, infants (< 12 months of age) with visits obtained significantly more well-child visits across States. This finding is consistent with the fact that periodicity guidelines in both 1989 and 1992 recommended about twice as many preventive care visits for infants than for toddlers (e.g., six versus three, respectively). Gender was not significantly related to the number of well-child visits among users under three years of age.

Findings with respect to race and ethnicity across States were somewhat complex. In three of four States, black users under three years of age had significantly fewer well-child visits than did their white counterparts. In Georgia, the opposite pattern was observed. The two additional race classifications (other and unknown race) did not show consistent trends across States--only in California did these children have

significantly more preventive care visits compared to whites. Finally, in California and Georgia, Hispanic users under three years of age obtained significantly fewer well-child visits than did their non-Hispanics counterparts.

The pattern of findings with respect to metropolitan residential status was generally specific to each State. In California, users under three years of age who resided in urban and suburban locales received significantly more well-child visits than did their rural counterparts. In Georgia, the opposite pattern was observed. Results were mixed in Michigan and Tennessee.

C. EPSDT Screening Visits - Multivariate Analyses

We focus our multivariate analysis of EPSDT visits on children under three years of age since AAP periodicity guidelines in effect during both 1989 and 1992 recommended at least one annual well-child visit for such children. Thus, the analysis includes only those children for whom at least one well-child visit was expected.[19]

1. Highlights of the Pooled Multivariate Results for EPSDT Visits

It is not surprising that many of the factors that influenced use of well-child visits (EPSDT and non-EPSDT combined) as reported above also affected use of EPSDT screening visits alone. We summarize the major findings for EPSDT screening visits in this section.

With respect to direct measures of change over time and provider supply:

- Across all four States, there was a significant increase in the probability of any use of EPSDT visits in 1992 compared to 1989. Likewise, in three of four States (excluding Tennessee), the number of EPSDT visits among users increased significantly over time. These findings were similar to those obtained with respect to all preventive care visits.
- In California, the effect of increases in the ratio of participating primary care providers to child Medicaid enrollees in the county of residence on both the probability of receiving any EPSDT visits and the number of such visits among users was greater in 1992 than in 1989. However, in Georgia, while increases in this ratio were associated with a lower probability of having an EPSDT screening visits in general, by 1992, this inverse relationship had weakened. In Michigan and Tennessee, there was no relationship between this ratio and the number of EPSDT visits in 1989, but by 1992, increases in this ratio were associated with a greater number of such visits. These findings were similar to those obtained with respect to all preventive care visits, but the mix of States with significant results varied.

---

[19] For children under three years of age, State-specific EPSDT guidelines matched AAP guidelines for all States and both years with one exception–Michigan in 1989. Michigan's EPSDT periodicity guidelines for toddlers ages one to two years during 1989 did not require but did permit one EPSDT visit. Thus, expectations about receipt of EPSDT visits for this age group are somewhat ambiguous.

With respect to other Medicaid programmatic and provider supply/access measures:

- In three of four States (excluding Tennessee), children living in counties that were designated as shortage areas had a lower probability of receiving any EPSDT visits compared to children living in non-shortage areas. Likewise, in two States (California and Tennessee), users living in counties designated as shortage areas received fewer EPSDT visits than children with such visits residing in non-shortage areas. Again, these findings were similar to those obtained with respect to all preventive care visits, but the mix of States with significant results varied.

- In three of four States (excluding Tennessee), increases in the ratio of participating clinics per 1,000 population in the county of residence were positively associated with increases in the probability of receiving any EPSDT visits. This pattern is similar to that observed for all preventive care visits. However, effects of this ratio on the number of EPSDT visits among users were inconsistent across States. With respect to all preventive care visits, this ratio was positively associated with the number of preventive care visits in two States.

- In general, results were inconsistent across States regarding the relationship between the receipt of EPSDT visits (any use and number) and the ratio of participating primary care providers to child Medicaid enrollees in the county of residence. Similar results were observed with respect to all preventive care visits.

With respect to Medicaid eligibility and enrollment characteristics

- Across all four States, compared to AFDC children, blind/disabled children were significantly less likely to receive at least one EPSDT visit. In two States (California and Tennessee), blind/disabled users obtained significantly fewer EPSDT visits than did their AFDC counterparts. These findings are almost identical to those for all preventive care visits.

- In contrast, in three of four States (excluding Michigan), poverty-related children were more likely than AFDC children to have an EPSDT visit. Likewise, across all four States, poverty-related children with EPSDT visits received more such visits than did users classified as AFDC. Separate State/year multivariate models (data not shown) indicated that these findings were true almost exclusively for 1992 only. Nearly identical results were observed with respect to all preventive care visits.

- In three of four States (excluding Tennessee), the medically needy/other group was significantly less likely than the AFDC group to have received any EPSDT visits. The medically needy/other user group had significantly more EPSDT visits compared to AFDC children with visits in California only. Similar results with respect to the relationship between receipt of preventive care visits (any use and number) and the medically needy/other classification were observed only for California.

- Only in California did foster care children have a greater likelihood of obtaining an EPSDT visit compared to all other AFDC children. However, foster care eligibility had no significant effect on the number of EPSDT visits received among users. Findings with respect to the relationship between foster care eligibility and receipt of preventive care visits (any use and number) was also specific to California.

- Across all States, the number of months of Medicaid enrollment within each analysis year was positively associated with an increased probability of receiving at least one EPSDT visit and an increased number of EPSDT visits among users. Identical findings were observed with respect to all preventive care visits.

- We also identified children with any Medicaid service use in both 1989 and 1992 as a proxy for long-term enrollment. In three of four States (excluding Tennessee), this measure was positively associated with any use of EPSDT visits. Similar findings were observed for all preventive care visits. However, in Michigan only, long-term enrollment was negatively related to the number of EPSDT visits received by users. No such relationship was observed for all preventive care visits.

With respect to demographics and metropolitan residential status:

- In all four States, compared to toddlers, infants were more likely to receive at least one EPSDT visit. Likewise, users less than 12 months of age also obtained more EPSDT visits than did users ages one to two years. Identical results were observed with respect to all preventive care visits. In general, these findings are consistent with periodicity guidelines that recommend about twice as many well-child visits for infants than for toddlers.

- With only one exception, gender was not related to the receipt (any use and number) of EPSDT or preventive care visits.

- In two States (California and Michigan), blacks were significantly less likely than whites to receive at least one EPSDT visit. In three of four States (excluding Georgia), black users had significantly fewer EPSDT visits than did their white counterparts. Very similar results were observed for all preventive care visits.

- In California only, Hispanic children were significantly less likely than non-Hispanic children to obtain any EPSDT visits. In addition, California Hispanic users received significantly fewer EPSDT visits than did their non-Hispanic counterparts. Similar findings were observed for all preventive care visits.

- The pattern of findings with respect to the relationship between metropolitan residential status and receipt of EPSDT visits (any use and number) was specific to each State. Similar State-specific results were found with respect to all preventive care visits.

2. Probability of Receiving Any EPSDT Visits--Pooled Logistic Models

Table V-3 summarizes the results of the pooled logistic regression models examining the probability of receiving at least one EPSDT visit. (See Appendix H for the accompanying detailed pooled logistic regression tables.)

a. *Direct Measures of Change Over Time and Provider Supply*

With respect to change over time in general, across all four States, there was a significant increase in the probability of any use of EPSDT visits in 1992 compared to 1989. The year by provider supply interaction term was significant and positive only for California and Georgia, but the interpretation is different. In California, the effect of increases in the ratio of participating primary care providers to child Medicaid enrollees in the county of residence on the probability of receiving any EPSDT visits was greater in 1992

TABLE V-3

LOGISTIC REGRESSION SUMMARY: PROBABILITY OF RECEIVING ANY EPSDT SCREENING VISITS, CHILDREN UNDER 3 YEARS OF AGE ONLY

POOLED MODEL INCLUDING INTERACTION TERM AND DUMMY VARIABLE FOR YEAR

Dependent Variable: Use/Non-Use of EPSDT Screening Visits				
Regressor *(X)*	California	Georgia	Michigan	Tennessee
Intercept	-	-	-	-
Age < 12 months	+	+	+	+
Black Race	-	+	-	+
Other Race	+			
Unknown Race	-			
Hispanic Ethnicity	-			
Gender				
Urban Residence	+	-	-	-
Surburban Residence	+	-	-	
Blind/Disabled	-	-	-	-
Foster Care	+		N/A	
Poverty-Related	+	+		+
Medically Needy	-	-	-	
Months Enrolled in Medicaid	+	+	+	+
Months Enrolled in a PCCM Program	N/A	N/A	-	-
Shortage Area	-	-	-	
Participating Clinics per 1,000 Population	+	+	+	
Participating Primary Care Providers/Child Medicaid Enrollees	+	-		-
Children with Service Use in both 1989 and 1992	+	+	+	
1992 Year Dummy	+	+	+	+
1992 Year Dummy By Participating Primary Care Providers/Child Medicaid Enrollees	+	+		

Plus (+) and minus (-) signs indicate statistically significant coefficients where $p < .05$. Blanks indicate coefficients that are not statistically significant.

N/A indicates that the variable was not available.

Excluded categories: Ages 1 - 2 years, White, Male, Rural, AFDC (AFDC/Foster Care in Michigan), and 1989.

compared to 1989. However, in Georgia, increases in this ratio were associated with a lower probability of having an EPSDT visit, but by 1992, this inverse relationship has weakened.

b. *Other Medicaid Programmatic and Provider Supply/Access Measures*

With the exception of Tennessee, children living in counties that were not designated as shortage areas had a higher probability of receiving any EPSDT visits than children residing in shortage areas. Increases in the ratio of participating clinics per 1,000 population in the county of residence were positively associated with increases in the probability of receiving any EPSDT visits in three of four States, again excluding Tennessee. Finally, results were mixed across States with respect to the effects on the probability of receiving any EPSDT visits for the ratio of participating primary care providers to child Medicaid enrollees in the county of residence. In Georgia and Tennessee, this effect was negative while in California it was positive.

Information on participation in PCCM programs was available in only two States--Michigan and Tennessee. Contrary to expectations, in both States, months of enrollment in a PCCM program was negatively related to the probability of obtaining at least one EPSDT screening visit. That is, the longer the participation in a PCCM program, the less likely a Michigan or Tennessee Medicaid child was to obtain an EPSDT screening visit.

c. *Medicaid Eligibility and Enrollment Characteristics*

Across all four study States, compared to AFDC children, blind/disabled children were significantly less likely to obtain at least one EPSDT visit. In contrast, in three of four States (excluding Michigan), poverty-related children were more likely than AFDC children to have an EPSDT visit. Separate State/year logistic models (data not shown) indicated this poverty-related finding was true predominantly in 1992 across States. Only in California did foster care children have a greater likelihood of obtaining an EPSDT visit compared to all other AFDC children. In three of four States (excluding Tennessee), the medically needy/other group was significantly less likely than the AFDC group to have received any EPSDT visits.

With respect to enrollment duration, across all States, the greater the number of months enrolled in Medicaid within each analysis year, the greater the probability of receiving an EPSDT visit. We also identified children with any Medicaid service use in both 1989 and 1992 as a proxy for long-term enrollment. In three of four States (excluding Tennessee), this measure was positively associated with any use of EPSDT visits.

d. *Demographics and Metropolitan Residential Status*

In all four States, compared to toddlers (ages 1 - 2 years), infants (< 12 months of age) were more likely to receive at least one EPSDT visit. This finding is consistent with the fact that periodicity guidelines in both 1989 and 1992 recommended about twice as many preventive care visits for infants than for toddlers (e.g., six versus three, respectively). Gender was not significantly related to receipt of any EPSDT visits.

Findings with respect to race and ethnicity across States were quite mixed. In California and Michigan, blacks were significantly less likely than whites to have any EPSDT visits. In Georgia and Tennessee, the opposite pattern was observed. The two additional race classifications (other and unknown race) did not show consistent trends across States which may be due at least in part to unreliable coding. Finally, for California only, Hispanics were significantly less likely than non-Hispanics to have obtained at least one EPSDT visit.

In two States (Georgia and Michigan), urban and suburban dwellers had a high probability of receiving any EPSDT visits compared to children residing in rural areas. In California, the opposite trends were observed. In Tennessee, urban children were less likely than rural children to obtain at least one EPSDT visit.

3. Number of EPSDT Visits Among Users--Pooled Linear Models

Table V-4 summarizes the results of the pooled linear regression models examining the number of EPSDT visits received among users. (See Appendix I for the accompanying detailed pooled linear regression tables.)

a. *Direct Measures of Change Over Time and Provider Supply*

With respect to change over time in general, in three of four States (excluding Tennessee), there was a significant increase in the number of EPSDT visits in 1992 compared to 1989. In contrast, the opposite result was observed in Tennessee. The year by provider supply interaction term was significant and positive for three of four States. In California, the effect of increases in the ratio of participating primary care providers to child Medicaid enrollees in the county of residence on the number of EPSDT visits among users under three years of age was greater in 1992 compared to 1989. In Michigan and Tennessee, where was no relationship between the ratio and the number of EPSDT visits in 1989, however by 1992, increases in this ratio were associated with a greater number of such visits among users.

TABLE V-4

ORDINARY LEAST SQUARES REGRESSION SUMMARY: NUMBER OF EPSDT SCREENING VISITS, USERS UNDER 3 YEARS OF AGE ONLY

POOLED MODEL INCLUDING INTERACTION TERM AND DUMMY VARIABLE FOR YEAR

	Dependent Variable: Number of EPSDT Screening Visits			
Regressor *(X)*	California	Georgia	Michigan	Tennessee
Intercept		-		+
Age < 12 months	+	+	+	+
Black Race	-	+	-	-
Other Race	+			
Unknown Race	+			
Hispanic Ethnicity	-			
Gender	+			
Urban Residence	+	-		-
Surburban Residence		-	-	
Blind/Disabled	-			-
Foster Care			N/A	
Poverty-Related	+	+	+	+
Medically Needy	+			
Months Enrolled in Medicaid	+	+	+	+
Months Enrolled in a PCCM Program	N/A	N/A		
Shortage Area	-			-
Participating Clinics per 1,000 Population		+		-
Participating Primary Care Providers/Child Medicaid Enrollees	+			
Children with Service Use in both 1989 and 1992			-	
1992 Year Dummy	+	+	+	-
1992 Year Dummy By Participating Primary Care Providers/Child Medicaid Enrollees	+		+	+

Plus (+) and minus (-) signs indicate statistically significant coefficients where $p < .05$. Blanks indicate coefficients that are not statistically significant.

N/A indicates that the variable was not available.

Excluded categories: Ages 1 - 2 years, White, Male, Rural, AFDC (AFDC/Foster Care in Michigan), and 1989.

b. *Other Medicaid Programmatic and Provider Supply/Access Measures*

Three county-level measures were included in our analyses to examine the effects of provider supply/access on the number of EPSDT visits among users under three years of age. In California and Tennessee, users living in counties that were not designated as primary care shortage areas received more EPSDT visits than children with such visits residing in shortage areas. With respect to the ratio of participating clinics per 1,000 population in the county of residence and the ratio of participating primary care providers to child Medicaid enrollees in the county of residence, effects on the number of EPSDT visits among users were inconsistent across States.

Information on participation in PCCM programs was available in only two States--Michigan and Tennessee. Months of PCCM enrollment had no effect on the number of EPSDT visits among children with such visits.

c. *Medicaid Eligibility and Enrollment Characteristics*

Across all four States, poverty-related children with EPSDT visits received more such visits than did users classified as AFDC. In California and Tennessee, blind/disabled users obtained significantly fewer EPSDT visits than did their AFDC counterparts. The medically needy/other user group had significantly more EPSDT visits compared to AFDC children with visits in California only. Finally, foster care eligibility had no significant effect on the number of EPSDT visits received by users.

With respect to enrollment duration, across all States, the number of months enrolled in Medicaid within each analysis year was significantly and positively related to the number of EPSDT visits among users under three years of age. We also identified children with any Medicaid service use in both 1989 and 1992 as a proxy for long-term enrollment. This measure was negatively related to the number of EPSDT visits received by users in Michigan only.

d. *Demographics and Metropolitan Residential Status*

Compared to toddlers (ages 1 - 2 years) with visits, infants (< 12 months of age) with visits obtained significantly more EPSDT visits across States. This finding is consistent with the fact that periodicity guidelines in both 1989 and 1992 recommended about twice as many preventive care visits for infants than for toddlers (e.g., six versus three, respectively). Female users under three years of age obtained significantly more EPSDT visits than did male users in California only.

Findings with respect to race and ethnicity across States were mixed. In three of four States, black users under three years of age had significantly fewer EPSDT visits than did their white counterparts. In

Georgia, the opposite pattern was observed. The two additional race classifications (other and unknown race) did not show consistent trends across States--only in California did these children have significantly more EPSDT visits compared to whites. Finally, in California only, Hispanic users under three years of age obtained significantly fewer EPSDT visits than did their non-Hispanics counterparts.

The pattern of findings with respect to metropolitan residential status was specific to each State. In California, urban users had more EPSDT visits than did rural users. The opposite finding was observed in Tennessee. In Georgia, users who resided in urban and suburban locales received significantly fewer EPSDT visits than did their rural counterparts. In Michigan, children with EPSDT visits living in suburban areas had fewer such visits than did rural users.

D. Age-Appropriate Immunizations - Multivariate Analyses

We focus our multivariate analysis of age-appropriate immunizations on children under three years of age since AAP periodicity guidelines in effect during both 1989 and 1992 recommended at least one common childhood immunization for such children. Thus, the analysis includes only those children for whom at least one immunization was expected.[20]

1. Highlights of the Pooled Multivariate Results for Age-Appropriate Immunizations

We summarize the major findings for age-appropriate immunizations in this section according to the four major classes of explanatory variables included in our analyses.

With respect to direct measures of change over time and provider supply:

- In three of four States (excluding Tennessee), there was a significant increase in the probability of receiving any immunizations among all children under three years of age in 1992 compared to 1989. In all four States, there was a significant increase in the number of age-appropriate immunizations received among users under three years of age in 1992 compared to 1989.

- In California, the effect of increases in the ratio of participating primary care providers to child Medicaid enrollees in the county of residence on the probability of receiving immunizations was greater in 1992 than in 1989. In Georgia, while increases in this ratio were associated with a lower probability of receiving any immunizations in general, by 1992, this inverse relationship has weakened. With respect to the number of immunizations among users, this year by provider supply interaction term was significant and positive only in California indicating that while there

---

[20] For children under three years of age, State-specific EPSDT guidelines for immunization administration differed somewhat from AAP guidelines, especially in 1992. To permit comparisons between States and over time, it was necessary to use the AAP guidelines as a common standard for determining age-appropriateness for all immunizations (EPSDT and non-EPSDT combined).

was no relationship between this ratio and the number of immunizations received, by 1992, increases in this ratio were associated with a greater number of immunizations among users.

With respect to other Medicaid programmatic and provider supply/access measures:

- In three of four States (excluding Michigan), children living in counties with a shortage of primary care providers had a lower probability of receiving any immunizations than children residing in non-shortage areas. In two States (California and Georgia), users living in shortage areas received fewer immunizations than their counterparts residing in non-shortage areas.

- With respect to the effects of the ratio of participating clinics per 1,000 population in the county of residence and the ratio of participating primary care providers to child Medicaid enrollees on the probability of any immunizations, results were generally State-specific. Neither ratio measure had a significant effect on the number of immunizations received by users.

- Information on PCCM program participation was available in two States (Michigan and Tennessee). Results were contrary to expectations. Months of PCCM enrollment was negatively related to the probability of any immunizations in one State (Tennessee), but in neither State did this measure have an effect on the number of immunizations among users.

With respect to Medicaid eligibility and enrollment characteristics:

- Across all four States, compared to AFDC children, blind/disabled children were significantly less likely to obtain at least one immunization. In three of four States (excluding Georgia), blind/disabled users received significantly fewer immunizations than did their AFDC counterparts.

- In contrast, in all four States, poverty-related children were more likely than AFDC children to have an immunization. Likewise, poverty-related children with immunizations received more such services than did users classified as AFDC. Separate State/year multivariate models (data not shown) indicated that these findings were true predominantly in 1992 only across States.

- Results regarding the impact of foster care eligibility on the use and number of immunizations were not statistically significant with two exceptions. Only in Tennessee did foster care children have a decreased likelihood of obtaining any immunizations compared to all other AFDC children. In Georgia only, foster care users obtained significantly fewer immunizations than did their other AFDC counterparts.

- Results with respect to the medically needy/other group were also State-specific. This eligibility group was significantly less likely than the AFDC group to have received any immunizations in Georgia only. A similar negative relationship was observed in Georgia in terms of the number of immunizations received among medically needy/other users versus AFDC users. The opposite pattern was observed in California for the number of immunizations only.

- Across all four States, the number of months enrolled in Medicaid within each analysis year was positively related to both the probability of receiving any immunizations and the number of immunizations obtained by users.

- The effects of long-term Medicaid enrollment on the use and number of immunizations were predominantly not statistically significant.

With respect to demographics and metropolitan residential status:

- During 1989, there was little difference in AAP periodicity guidelines in terms of the total number of immunizations recommended for infants and toddlers (five versus four, respectively). By 1992, however, infants were expected to receive almost twice as many immunizations as toddlers (nine versus five, respectively). In all four States, holding all other factors constant, compared to toddlers, infants were more likely to receive at least one immunization. Similarly, among users, infants obtained more immunizations than did toddlers. This pattern of results could reflect the greater number of well-child visits recommended for infants in both analysis years compared to toddlers, providing increased opportunities for vaccination for the youngest age group. This interpretation is supported by findings reported earlier indicating that, compared to toddlers, infants had an increased probability of obtaining any preventive care visits and, among users, received more preventive care visits.

- Gender was not significantly related to either the receipt of any immunizations nor the number of immunizations obtained by users.

- In only one State (California), black children were significantly less likely than white children to obtain at least one immunization. In two States (California and Tennessee), black users had fewer immunizations than did their white counterparts.

- In only one State (California), Hispanics were significantly less likely than non-Hispanics to have obtained any immunizations. In two States (California and Tennessee), Hispanic users received significantly fewer immunizations than did their non-Hispanic counterparts.

- Results with respect to metropolitan residential status were largely State-specific. In the two southern States (Georgia and Tennessee), compared to rural dwellers, children residing in urban and suburban rural areas were less likely to have any immunizations and, among users, generally obtained fewer immunizations. In Califomia and Michigan, the opposite pattems tended to prevail.

2. Probability of Receiving Any Age-Appropriate Immunizations--Pooled Logistic Models

Table V-5 summarizes the results of the pooled logistic regression models examining the probability of receiving at least one age-appropriate immunization. (See Appendix J for the accompanying detailed pooled logistic regression tables.)

a. *Direct Measures of Change Over Time and Provider Supply*

With respect to change over time in general, in three of four States, there was a significant increase in the probability of receiving any immunizations among all children under three years of age in 1992 compared to 1989. For Tennessee, this relationship was not statistically significant.

The year by provider supply interaction term was significant and positive only for California and Georgia. In California, the effect of increases in the ratio of participating primary care providers to child Medicaid enrollees in the county of residence on the probability of receiving any immunizations was greater

TABLE V-5

LOGISTIC REGRESSION SUMMARY: PROBABILITY OF RECEIVING ANY AGE-APPROPRIATE IMMUNIZATIONS, CHILDREN UNDER 3 YEARS OF AGE ONLY

POOLED MODEL INCLUDING INTERACTION TERM AND DUMMY VARIABLE FOR YEAR

Dependent Variable: Use/Non-Use of Age Appropriate Immunizations				
Regressor *(X)*	California	Georgia	Michigan	Tennessee
Intercept	-	-	-	-
Age < 12 months	+	+	+	+
Black Race	-			
Other Race	+		-	
Unknown Race	-		-	
Hispanic Ethnicity	-			
Gender				
Urban Residence	+	-		-
Surburban Residence		-	+	-
Blind/Disabled	-	-	-	-
Foster Care			N/A	-
Poverty-Related	+	+	+	+
Medically Needy		-		
Months Enrolled in Medicaid	+	+	+	+
Months Enrolled in a PCCM Program	N/A	N/A		-
Shortage Area	-	-		-
Participating Clinics per 1,000 Population	+		+	-
Participating Primary Care Providers/Child Medicaid Enrollees	+	-		-
Children with Service Use in both 1989 and 1992	+			-
1992 Year Dummy	+	+	+	
1992 Year Dummy By Participating Primary Care Providers/Child Medicaid Enrollees	+	+		

Plus (+) and minus (-) signs indicate statistically significant coefficients where $p < .05$. Blanks indicate coefficients that are not statistically significant.

N/A indicates that the variable was not available.

Excluded categories: Ages 1 - 2 years, White, Male, Rural, AFDC (AFDC/Foster Care in Michigan), and 1989.

in 1992 compared to 1989. In Georgia, while increases in this ratio were associated with a lower likelihood of receiving any immunizations in general, by 1992, this inverse relationship had weakened.

b. *Other Medicaid Programmatic and Provider Supply/Access Measures*

With the exception of Michigan, children living in counties that were not designated as shortage areas had a higher probability of receiving any immunizations than children residing in shortage areas.

Results were inconsistent across States with respect to the two county-level ratios representing provider supply/access--the ratio of participating clinics per 1,000 population in the county of residence and the ratio of participating primary care providers to child Medicaid enrollees in the county of residence. In California, both measures were positively related to the probability of obtaining any immunizations. The opposite pattern was observed in Tennessee. In Georgia, the ratio measure for primary care providers was negatively related to receipt of any immunizations. Finally, in Michigan, the ratio measure for participating clinics was positively associated with receiving at least one immunization.

Information on participation in PCCM programs was available in only two States--Michigan and Tennessee. Contrary to expectations, in Tennessee only, months of enrollment in a PCCM program was negatively related to the probability of obtaining at least one immunization. That is, the longer a child participated in a Tennessee PCCM program, the less likely that child was to obtain at least one immunization. Separate State/year logistic models (data not shown) indicate that this finding was true only in 1989 in Tennessee.

c. *Medicaid Eligibility and Enrollment Characteristics*

Across all four study States, compared to AFDC children, blind/disabled children were significantly less likely to obtain at least one immunization. In contrast, in all four States, poverty-related children were more likely than AFDC children to have an immunization. Separate State/year logistic models (data not shown) indicated this poverty-related finding was true predominantly in 1992 across States. Only in Tennessee did foster care children have a decreased likelihood of obtaining an immunization compared to all other AFDC children. The medically needy/other group was significantly less likely than the AFDC group to have received any immunizations in Georgia only.

With respect to enrollment duration, across all States, the greater the number of months enrolled in Medicaid within each analysis year, the greater the probability of receiving any immunizations. We also identified children with any Medicaid service use in both 1989 and 1992 as a proxy for long-term enrollment. In California, this measure was positively related to the probability of receiving immunizations. The opposite effect was observed in Tennessee.

d. *Demographics and Metropolitan Residential Status*

In all four States, compared to toddlers (ages 1 - 2 years), infants (< 12 months of age) were more likely to receive at least one immunization. Gender was not significantly related to receipt of any immunizations.

Findings with respect to race and ethnicity across States were quite mixed. In California only, blacks were significantly less likely than whites to obtain at least one immunization. The two additional race classifications (other and unknown race) did not show consistent trends across States which may be due at least in part to unreliable coding. Finally, for California only, Hispanics were significantly less likely than non-Hispanics to have obtained at least one immunization.

Results with respect to metropolitan residential status were largely State-specific. In two States (Georgia and Tennessee), urban and suburban dwellers had a lower probability of receiving any immunizations compared to children residing in rural areas. In California, children living in urban areas were more likely to receive at least one immunization compared to rural children. In Michigan, suburban children were more likely than rural children to obtain any immunizations.

3. Number of Age Appropriate Immunizations Among Users--Pooled Linear Models

Table V-6 summarizes the results of the pooled linear regression models examining the number of age-appropriate immunizations received among users. (See Appendix K for the accompanying detailed pooled linear regression tables.)

a. *Direct Measures of Change Over Time and Provider Supply*

With respect to change over time in general, in all four States, there was a significant increase in the number of age-appropriate immunizations received among users under three years of age in 1992 compared to 1989. The year by provider supply interaction term was significant and positive in only California. For this State, while there was no relationship between the ratio of participating primary care providers to child Medicaid enrollees on the number of immunizations among users, by 1992, increases in this ratio were associated with a greater number of immunizations.

TABLE V-6

ORDINARY LEAST SQUARES REGRESSION SUMMARY: NUMBER OF AGE-APPROPRIATE IMMUNIZATIONS, USERS UNDER 3 YEARS OF AGE ONLY

POOLED MODEL INCLUDING INTERACTION TERM AND DUMMY VARIABLE FOR YEAR

Dependent Variable: Number of Age-Appropriate Immunizations				
Regressor *(X)*	California	Georgia	Michigan	Tennessee
Intercept			-	-
Age < 12 months	+	+	+	+
Black Race	-			-
Other Race	+	+		
Unknown Race	-	-		
Hispanic Ethnicity	-			-
Gender				
Urban Residence		-	+	-
Surburban Residence			+	
Blind/Disabled	-		-	-
Foster Care		-	N/A	
Poverty-Related	+	+	+	+
Medically Needy	+	-		
Months Enrolled in Medicaid	+	+	+	+
Months Enrolled in a PCCM Program	N/A	N/A		
Shortage Area	-	-		
Participating Clinics per 1,000 Population				
Participating Primary Care Providers/Child Medicaid Enrollees				
Children with Service Use in both 1989 and 1992				
1992 Year Dummy	+	+	+	+
1992 Year Dummy By Participating Primary Care Providers/Child Medicaid Enrollees	+			

Plus (+) and minus (-) signs indicate statistically significant coefficients where $p < .05$. Blanks indicate coefficients that are not statistically significant.

N/A indicates that the variable was not available.

Excluded categories: Ages 1 - 2 years, White, Male, Rural, AFDC (AFDC/Foster Care in Michigan), and 1989.

b. Other Medicaid Programmatic and Provider Supply/Access Measures

Three county-level measures were included in our analyses to examine the effects of provider supply/access on the number of immunizations among users under three years of age. In California and Georgia, users living in counties that were not designated as primary care shortage areas received more immunizations than their counterparts residing in shortage areas. With respect to the ratio of participating clinics per 1,000 population in the county of residence and the ratio of participating primary care providers to child Medicaid enrollees in the county of residence, no statistically significant effects on the number of immunizations among users were observed.

Information on participation in PCCM programs was available in only two States--Michigan and Tennessee. Months of PCCM enrollment had no effect on the number of immunizations among children who received such services.

c. Medicaid Eligibility and Enrollment Characteristics

Across all four States, poverty-related children with immunizations received more such services than did users classified as AFDC. In three of four States (excluding Georgia), blind/disabled users obtained significantly fewer immunizations than did their AFDC counterparts. Results with respect to the medically needy/other user group were mixed--in California, this measure was positively associated with the number of immunizations received, however, a negative relationship was observed in Georgia. Finally, in Georgia only, foster care users obtained significantly fewer immunizations than did their other AFDC counterparts.

With respect to enrollment duration, across all States, the number of months enrolled in Medicaid within each analysis year was significantly and positively related to the number of immunizations among users under three years of age. We also identified children with any Medicaid service use in both 1989 and 1992 as a proxy for long-term enrollment. This measure had no effect on the number of immunizations received by users.

d. Demographics and Metropolitan Residential Status

Compared to toddlers (ages 1 - 2 years) with immunizations, infants (< 12 months of age) with immunizations obtained significantly more such services across States. Gender was not significantly related to the number of immunizations received among users.

Findings with respect to race and ethnicity across States were mixed. In California and Tennessee, black users under three years of age had significantly fewer immunizations than did their white counterparts. The two additional race classifications (other and unknown race) did not show consistent trends across all

States. In California and Georgia, compared to white children with immunizations, users classified as members of other races obtained more immunizations. Also in these two States, users classified as having an unknown race received significantly fewer immunizations than did their white counterparts. Finally, in California and Tennessee, Hispanic users under three years of age obtained significantly fewer immunizations than did their non-Hispanics counterparts.

The pattern of findings with respect to metropolitan residential status was again specific to each State. In Georgia and Tennessee, urban users had fewer immunizations than did rural users. In Michigan, users who resided in urban and suburban locales received significantly more immunizations than did their rural counterparts.

VI. USE OF SELECTED DIAGNOSIS AND TREATMENT SERVICES

Preventive services, such as those provided through EPSDT, are expected to reduce health care service needs over the long run. However, in the short term, preventive services can increase health care utilization because identified medical problems that would have been left unattended are diagnosed and treated. In this chapter, we examine this hypothesis using both descriptive and multivariate analysis.

While not reported in this chapter, we estimated models in which we pooled data from all States using all dependent variables. Using dummy variables for Georgia, Michigan, and Tennessee to assess differences among States and in comparison to California, we found statistically significant differences across all models with the following exceptions: (1) in 1989, for the probability of having an inpatient stay, Michigan and Tennessee were not different from California, (2) in 1989, for the number of diagnostic and treatment visits among users, Tennessee was not different from California, (3) in 1989, for the number of inpatient days among users, Georgia, Michigan and Tennessee were not different from California, and (4) in 1992, for both the number of diagnostic and treatment visits and the number of inpatient days among users, Michigan was not different from California.

A. Summary of Trends from Descriptive Analyses of Illness-Related Services

In our descriptive analyses, we divided Medicaid children in each study State into one of two groups: those who received at least one Medicaid-financed well-child visit (inside or outside of EPSDT) during each analysis year, and those who did not. Then we compared these two groups with respect to use of selected diagnosis and treatment services. We summarize our descriptive findings below:

- Excluding Georgia for 1989, children who had at least one well-child visit were more likely to be hospitalized than children who had no well-child visits. However, fewer inpatient days on average were observed for children with preventive care (excluding Georgia and Tennessee for 1992). Variations within age groups by preventive care status generally followed these trends.

- In all study States and both analysis years, children who obtained preventive care were more likely to receive other types of diagnosis and treatment services as well, including diagnosis/treatment visits, prescription drugs, and other health services. These patterns were consistent within age groups by preventive care status.

B. Diagnosis/Treatment Visits - Multivariate Analyses

We focus our multivariate analysis of diagnosis and treatment visits on children under twenty-one years of age.

As with the other regression analyses on service utilization presented throughout this report, two measures of change over time are included in these pooled models--a dummy variable for the analysis year

and an interaction term for this year dummy by the ratio of participating primary care providers to child Medicaid enrollees in the county of residence. These pooled models permit the direct examination of change over time in general and whether changes over time in primary care provider supply/access in particular affect the probability of receiving any diagnostic and treatment visits or, among users, the number of such visits received.

1. Highlights of the Pooled Multivariate Results for Diagnostic and Treatment Visits

We summarize the major findings for diagnostic and treatment visits in this section according to the four major classes of explanatory variables used in our multivariate models.

With respect to direct measures of change over time and provider supply:

- For preventive care services (see Chapter V), change over time was often positive, indicating increased use of well-child visits overall, EPSDT screening visits alone and age-appropriate immunizations by 1992. Results regarding change over time were more mixed across States with respect to the receipt of diagnostic and treatment visits. In California, there was a decreased probability of children having any diagnostic and treatment visits between 1989 and 1992; however, there was no change over time in the number of diagnostic and treatment visits received by California users. In contrast, in Tennessee, the likelihood of receiving at least one diagnostic and treatment visit increased over time; but again, there was no change in the number of such visits among users. In Georgia and Michigan, the year dummy variable had no statistically significant effect on the probability of any diagnostic and treatment visits, but in both States, there was a significant increase over time in the number of such visits among users.

- The year by primary care provider supply interaction term had limited explanatory power in our regression models. In Georgia, while increases in this ratio were associated with both a lower probability of receiving any diagnostic and treatment visits and fewer such visits among users in general, by 1992, these inverse relationship had weakened. In Tennessee, results were mixed. No statistically significant effects were found in either California or Michigan.

With respect to other Medicaid programmatic and provider supply/access measures:

- Results with respect to the impact of the primary care shortage area measure on the receipt and number of diagnostic and treatment visits were specific to each State. Only in California was residence in a shortage area positively associated with both the use of any diagnostic and treatment visits as well as the number of such visits. Within each of the remaining States, results were inconsistent.

- For the most part, the ratio of participating clinics per 1,000 population in the county of residence was not significantly related to either the receipt of diagnostic and treatment services nor the number of such services rendered to users. Significant findings were State and dependent measure specific.

- In two States (California and Tennessee), increases in the ratio of participating primary care providers to child Medicaid enrollees in the county of residence were positively associated with both obtaining any diagnostic and treatment visits as well as the number of such visits among users. In one State (Georgia), the opposite was observed.

- Data on PCCM participation were available for only two States (Michigan and Tennessee). In one of these States (Tennessee), increases in the number of months enrolled in a PCCM program were negatively associated with both use of any diagnostic and treatment visits as well as the number of such visits among users. Results were inconsistent in Michigan.

- Finally, as noted previously, in the short-term, use of preventive services may increase health care utilization if medical problems that would have otherwise gone unattended are instead diagnosed and treated. Our multivariate results are consistent with this hypothesis. In all four States, being a user of preventive care visits was positively associated with obtaining any diagnostic and treatment visits as well as the number of such visits among users.

With respect to Medicaid eligibility and enrollment characteristics:

- With few exceptions, when statistically significant effects were observed, compared to the AFDC group, all other eligibility groups were more likely to receive any diagnostic and treatment visits and had more such visits.

- With respect to enrollment duration, across all States, the number of months enrolled in Medicaid during each analysis year was positively associated with the receipt of diagnostic and treatment visits as well as the number of such visits among users.

- We also identified children with Medicaid service use in both 1989 and 1992 as a proxy for long-term enrollment. Across all four States, this measure was positively associated with obtaining any diagnostic and treatment visits, but was negatively related to the number of such visits in one State (Georgia).

With respect to demographics and metropolitan residential status:

- Age had a clear, consistent impact on utilization of diagnostic and treatment visits. Compared to adolescents, infants and toddlers had a higher probability of any use of diagnostic and treatment visits as well as a greater number of such visits among users. In contrast, children in the middle age ranges (between three and 12 years of age) had a lower probability of use and received fewer visits than did adolescents.

- While gender typically had no impact on the use of preventive care services (see Chapter V), it did have a fairly consistent effect on utilization of diagnosis and treatment visits. Across all four States, females were more likely than males to receive any diagnostic and treatment visits. In one State (Michigan), among users, females also received more such visits than males, but in two States (California and Georgia), the reverse was true.

- In all four States, compared to their white counterparts, blacks were significantly less likely to receive a diagnostic and treatment visit and obtained fewer such visits.

- Results regarding the effects of Hispanic ethnicity on utilization of diagnostic and treatment visits were inconsistent across States. Compared to their non-Hispanic counterparts, Hispanics had a decreased probability of receiving a diagnostic and treatment visit in two States (California and Georgia), but the opposite was found in the other two States (Michigan and Tennessee). In only one State (Georgia) did Hispanic users obtain fewer diagnostic and treatment visits than did non-Hispanic users.

- The pattern of findings with respect to metropolitan residential status were quite idiosyncratic within and across States.

2. Probability of Receiving Any Diagnostic and Treatment Visits - Pooled Logistic Models

Table VI-1 summarizes the results of the pooled logistic regression models examining the probability of receiving at least one diagnostic and treatment visit. (See Appendix L for the accompanying detailed pooled logistic regression tables.)

a. *Direct Measures of Change Over Time and Provider Supply*

For preventive care services (see Chapter V), change over time was often positive, indicating increased use of well-child visits overall, EPSDT screening visits alone and age-appropriate immunizations by 1992. Results regarding change over time were more mixed across States with respect to the receipt of diagnostic and treatment visits. In California, there was a decreased probability of children having any diagnostic and treatment visits between 1989 and 1992. The opposite finding was obtained in Tennessee. The year dummy variable demonstrated no statistically significant effect in Georgia and Michigan.

The year by provider supply interaction term was significant and positive only for Georgia. In this State, while increases in the ratio of participating primary care providers to child Medicaid enrollees in the county of residence was associated with a lower probability of receiving any diagnostic and treatment visits in general, by 1992, this inverse relationship had weakened. The different effect was observed in Tennessee. In this State, the positive effects of increases in this ratio on any use of diagnostic and treatment visits tapered off between 1989 and 1992. No significant results were obtained in either California or Michigan.

b. *Other Medicaid Programmatic and Provider Supply/Access Measures*

Results with respect to the shortage area measure were inconsistent across States. Only in Georgia did children living in non-shortage areas have a higher probability of obtaining diagnostic and treatment visits than children residing in shortage areas. The opposite trend was observed In California and Tennessee. This measure was not statistically significant in Michigan.

Increases in the ratio of participating clinics per 1,000 population in the county of residence were positively associated with increases in the probability of receiving any diagnostic and treatment visits in California and Georgia. Similarly, a positive relationship was also observed between the ratio of participating primary care providers to child Medicaid enrollees in the county of residence and the likelihood of having a diagnostic and treatment visit in California and Tennessee. The opposite result occurred in Georgia.

Information on participation in PCCM programs was available in only two States--Michigan and Tennessee. In Michigan, the greater the number of months enrolled in a PCCM program, the greater the

TABLE VI-1

LOGISTIC REGRESSION SUMMARY: PROBABILITY OF RECEIVING ANY DIAGNOSTIC AND TREATMENT VISITS, CHILDREN UNDER 21 YEARS OF AGE

POOLED MODEL INCLUDING INTERACTION TERM AND DUMMY VARIABLE FOR YEAR

	Dependent Variable: Use/Non-Use of Diagnostic and Treatment Visits			
Regressor *(X)*	California	Georgia	Michigan	Tennessee
Intercept	-	-	-	-
Age < 12 months	+	+	+	+
Age = 1 - 2 years	+	+	+	+
Age = 3 - 6 years	-	-	-	-
Age = 7 - 12 years	-	-	-	-
Black Race	-	-	-	-
Other Race	+	-	-	-
Unknown Race	+	-	-	
Hispanic Ethnicity	-	-	+	+
Gender	+	+	+	+
Urban Residence		-	-	-
Surburban Residence		-		
Blind/Disabled	+	+	+	-
Foster Care		+	N/A	
Poverty-Related		+	+	
Medically Needy	-	+		
Months Enrolled in Medicaid	+	+	+	+
Months Enrolled in a PCCM Program	N/A	N/A	+	-
User of Preventive Care Visits	+	+	+	+
Shortage Area	+	-		+
Participating Clinics per 1,000 Population	+	+		
Participating Primary Care Providers/Child Medicaid Enrollees	+	-		+
Children with Service Use in both 1989 and 1992	+	+	+	+
1992 Year Dummy	-			+
1992 Year Dummy By Participating Primary Care Providers/Child Medicaid Enrollees		+		-

Plus (+) and minus (-) signs indicate statistically significant coefficients where $p < .05$. Blanks indicate coefficients that are not statistically significant.

N/A indicates that the variable was not available.

Excluded categories: Ages 13+ years, White, Male, Rural, AFDC (AFDC/Foster Care in Michigan), and 1989.

likelihood of receiving at least one diagnostic and treatment visit. The opposite result was observed in Tennessee.

Finally, as noted previously, in the short-term, use of preventive services may increase health care utilization if medical problems that would have otherwise gone unattended are instead diagnosed and treated. Our multivariate results are consistent with this hypothesis. In all four States, being a user of preventive care visits was associated with an increased probability of obtaining any diagnostic and treatment visits vis-à-vis children without preventive care visits.

c. *Medicaid Eligibility and Enrollment Characteristics*

In three of four States (excluding Tennessee), compared to AFDC children, blind/disabled children were significantly more likely to obtain a diagnostic and treatment visit. The opposite result was found in Tennessee. In Georgia and Michigan, poverty-related children were also more likely to have diagnostic and treatment visits than were AFDC children. This pattern was also true for foster care children in Georgia only. Findings with respect to the medically needy/other group were inconsistent. In Georgia, this measure was positively associated with receipt of any diagnostic and treatment visits, while in California this relationship was negative.

With respect to enrollment duration, across all States, the greater the number of months enrolled in Medicaid within each analysis year, the greater the probability of receiving any diagnostic and treatment visits. We also identified children with any Medicaid service use in both 1989 and 1992 as a proxy for long-term enrollment. Across all four States, this measure was positively associated with obtaining diagnostic and treatment visits.

d. *Demographics and Metropolitan Residential Status*

Age had a clear, consistent impact on the use of diagnostic and treatment visits across all four States. The youngest children (infants and toddlers) were more likely to obtain at least one diagnostic and treatment visit than adolescents (ages 13 years and above). In contrast, children in the middle age ranges (ages three to six years and seven to twelve years) were significantly less likely than adolescents to receive a diagnostic and treatment visit.

While gender typically had no impact on the use of preventive care services (see Chapter V), it did have a consistent effect on the use of diagnosis and treatment visits. Across all four States, females were more likely than males to receive any diagnostic and treatment visits.

Findings with respect to race and ethnicity across States were generally mixed. Black children were significantly less likely than white children to obtain a diagnostic and treatment visit in all four States. While the results with respect to children classified as other or unknown race showed some consistency across States, we interpret these findings with caution given that the coding of these measures appeared to be somewhat unreliable. In three of four States, children who were members of other races had a decreased probability of receiving a diagnostic and treatment visit compared to white children. In California, the opposite pattern was observed. Similarly, in Georgia and Michigan, children whose race was unknown were also more unlikely than whites to obtain any diagnostic and treatment visits. Again, the reverse results were found for California. Finally, compared to non-Hispanic children, Hispanics had a decreased probability of receiving a diagnostic and treatment visit in California and Georgia, while the opposite patterns were observed in Michigan and Tennessee.

Metropolitan residential status had a significant impact on the receipt of diagnostic and treatment visits in three of four States (excluding California). In Georgia, Michigan and Tennessee, urban dwellers had a decreased probability of obtaining any diagnostic and treatment visits compared to children residing in rural areas. In Georgia only, children living in suburban locales were also less likely than rural children to have a diagnostic and treatment visit.

3. Number of Diagnostic and Treatment Visits Among Users - Pooled Linear Models

Table VI-2 summarizes the results of the pooled linear regression models examining the number of diagnostic and treatment visits received by children with at least one such visit. (See Appendix M for the accompanying detailed pooled linear regression tables.)

a. *Direct Measures of Change Over Time and Provider Supply*

Change over time with respect to the number of diagnostic and treatment visits received by users under 21 years of age was found in two of four States. That is, in Georgia and Michigan, there was a significant increase in the number of diagnostic and treatment visits among users between 1989 and 1992. No significant change was observed in California or Tennessee.

The year by provider supply interaction term was significant and positive for two of four States (Georgia and Tennessee). In Tennessee, the effect of increases in the ratio of participating primary care providers to child Medicaid enrollees in the county of residence on the number of diagnostic and treatment visits among users under 21 years of age was greater in 1992 compared to 1989. However, in Georgia, while increases in this ratio were associated with a lower number of such visits in general, by 1992, this inverse relationship had weakened.

TABLE VI-2

ORDINARY LEAST SQUARES REGRESSION SUMMARY: NUMBER OF DIAGNOSTIC AND TREATMENT VISITS, USERS UNDER 21 YEARS OF AGE

POOLED MODEL INCLUDING INTERACTION TERM AND DUMMY VARIABLE FOR OVERLAP CHILDREN

Dependent Variable: Number of Diagnostic and Treatment Visits				
Regressor *(X)*	California	Georgia	Michigan	Tennessee
Intercept		+	+	+
Age < 12 months	+	+	+	+
Age = 1 - 2 years	+	+	+	+
Age = 3 - 6 years	-	-	-	-
Age = 7 - 12 years	-	-	-	-
Black Race	-	-	-	-
Other Race	-	-	-	-
Unknown Race	+	+		+
Hispanic Ethnicity		-		
Gender	-	-	+	
Urban Residence	+		+	-
Surburban Residence	+	-	+	+
Blind/Disabled	+	+	+	+
Foster Care	+	+	N/A	+
Poverty-Related		+		-
Medically Needy	+	+	+	+
Months Enrolled in Medicaid	+	+	+	+
Months Enrolled in a PCCM Program	N/A	N/A	-	-
User of Preventive Care Visits	+	+	+	+
Shortage Area	+		-	
Participating Clinics per 1,000 Population	-			
Participating Primary Care Providers/Child Medicaid Enrollees	+	-	+	+
Children with Service Use in both 1989 and 1992		-		
1992 Year Dummy		+	+	
1992 Year Dummy By Participating Primary Care Providers/Child Medicaid Enrollees		+		+

Plus (+) and minus (-) signs indicate statistically significant coefficients where $p < .05$. Blanks indicate coefficients that are not statistically significant.

N/A indicates that the variable was not available.

Excluded categories: Ages 13+ years, White, Male, Rural, AFDC (AFDC/Foster Care in Michigan), and 1989.

b. *Other Medicaid Programmatic and Provider Supply/Access Measures*

Three county-level measures were included in our analyses to examine the effects of provider supply/access on the number of diagnostic and treatment visits among users under twenty-one years of age. In California only, users residing in shortage areas with respect to primary care provider supply obtained more diagnostic and treatment visits than did their counterparts located in non-shortage areas. The opposite result was found in Michigan only.

The measure representing participating clinics per 1,000 population in the county of residence was statistically significant in only one State--California. Here, this measure was negatively related to the number of diagnostic and treatment visits received by users.

The ratio of participating primary care providers to child Medicaid enrollees in the county of residence was significant and positive in three of four States (excluding Georgia), indicating that increases in the primary care provider supply was associated with increases in the number of diagnostic and treatment visits among users under 21 years of age. In Georgia, the opposite result was observed.

Information on participation in PCCM programs was available in only two States--Michigan and Tennessee. In both of these States, the greater the number of months enrolled in a PCCM program, the fewer the diagnostic and treatment visits received by children with at least one such visit.

Finally, we also examined the relationship between receipt of any preventive care visits and the number of diagnostic and treatment visits among users. Across all four States, users of preventive care visits obtained significantly more diagnostic and treatment visits compared to non-users of preventive care visits.

c. *Medicaid Eligibility and Enrollment Characteristics*

With only one exception, when statistically significant relationships were observed, compared to AFDC users of diagnostic and treatment visits, users in all other eligibility groups obtained more such visits. The one statistically significant exception was observed in Tennessee. Here, users classified as poverty-related enrollees received fewer diagnostic and treatment visits than did their AFDC counterparts.

With respect to enrollment duration, across all States, the number of months enrolled in Medicaid within each analysis year was significantly and positively related to the number of diagnostic and treatment visits among users under 21 years of age. We also identified children with any Medicaid service use in both 1989 and 1992 as a proxy for long-term enrollment. This measure was negatively related to the number of diagnostic and treatment visits received by users in Georgia only.

d. *Demographics and Metropolitan Residential Status*

Age had a clear, consistent impact on the number of diagnostic and treatment visits received by users across all four States. The youngest users (infants and toddlers) obtained more diagnostic and treatment visits than did adolescents users (ages 13 years and above). In contrast, users in the middle age ranges (ages three to six years and seven to twelve years) received significantly fewer diagnostic and treatment visits than did their adolescent counterparts.

Results with respect to gender were somewhat inconsistent across States. In California and Georgia, male users obtained more diagnostic and treatment visits than did female users. The opposite finding was observed in Michigan.

With respect to race, in all four States, users who were black and those classified as other race received significantly fewer diagnostic and treatment visits than did their white counterparts. In three of four States (excluding Michigan), users for whom race was unknown obtained more such visits than did whites with any diagnostic and treatment visits. Finally, in Georgia only, Hispanic users obtained fewer diagnostic and treatment visits than did non-Hispanic users.

The pattern of findings with respect to metropolitan residential status was primarily specific to each State. In California and Michigan, both urban and suburban users received more diagnostic and treatment visits than did their rural counterparts. In Georgia, compared to rural children with any diagnostic and treatment visits, users living in suburban areas obtained fewer such visits. In Tennessee, while urban users had fewer diagnostic and treatment visits compared to rural users, the opposite was true for suburban versus rural users.

C. Prescription Drugs - Multivariate Analyses

We focus our multivariate analysis of prescription drug utilization on children under twenty-one years of age. To clarify, our measures of prescription drugs represent prescriptions filled; that is, prescription drugs actually dispensed to children. The claims data do *not* indicate whether the prescription drugs dispensed were actually used.

1. Highlights of the Pooled Multivariate Results for Prescription Drugs

We summarize the major findings for prescription drugs in this section according to the four major classes of explanatory variables used in our multivariate models.

With respect to direct measures of change over time and provider supply:

- In two States (Michigan and Tennessee), between 1989 and 1992, there were significant increases in both the probability of obtaining prescription drugs and the number of prescription drugs among users. In one State (Georgia), there was no change over time in prescription drug utilization patterns. In one State (California), the effects were mixed.

- The year by primary care provider supply interaction term was non-significant in all models except one. In California, while there was no relationship between the ratio of participating primary care providers to child Medicaid enrollees in the county of residence and the number of prescriptions in 1989, by 1992, increases in this ratio were associated with fewer prescriptions among users.

With respect to other Medicaid programmatic and provider supply/access measures:

- For the three county-level indicators of provider supply/access, results were inconsistent across measures within a State as well as across States. Overall, it is unclear how variations in provider supply/access affected prescription drug utilization in these States. Only one measure--the ratio of participating clinics per 1,000 population in the county of residence--produced uniform results within each State for both the probability of any prescription use and the number of prescriptions among users. In three of four States, as the supply of clinics increased, prescription drug utilization (both any use and number received) decreased. In one State (Georgia), the opposite trend was observed.

- In the two States with data on PCCM participation, opposite results were obtained with respect to the effects of this measure on both the probability of obtaining prescription drugs and the number of prescriptions among users. In Michigan, the results were positive while in Tennessee, findings were negative.

- In all four States, being a user of preventive care visits was associated with both an increased probability of receiving prescription drugs and a greater number of prescriptions among users.

With respect to Medicaid eligibility and enrollment characteristics

- In all four States, both medically needy/other and foster care children were significantly less likely to receive prescription drugs compared to AFDC children. Also, when statistically significant relationships were observed, compared to AFDC users of prescription drugs, users in all other eligibility groups generally obtained more such services.

- With respect to enrollment duration, across all States, the greater the number of months enrolled in Medicaid within each analysis year, the greater the probability of receiving any prescription drugs and the greater the number of prescriptions among users.

- Long-term enrollment was positively associated with obtaining prescription drugs in three of four States (excluding Georgia). However, the relationship between long-term enrollment and the number of prescriptions received by users was mixed across States.

With respect to demographics and metropolitan residential status:

- With one exception (Tennessee), infants and toddlers had a higher probability of receiving a prescription compared to adolescents. Also with one exception (California), children in the middle age ranges (three to six and seven to twelve years of age) were less likely than

adolescents to receive a prescription drug. However, the relationship between age and the number of prescriptions among users was variable across States.

- Across all four States, females were more likely than males to receive a prescription. In three of four States, female users also obtained more prescriptions than did their male counterparts.
- Across all four States, compared to whites, black children were significantly less likely to obtain a prescription and, among users, received fewer prescriptions.
- Results were mixed with respect to the effects of Hispanic ethnicity on the receipt of any prescriptions. In two States (California and Georgia), the effects were positive, but the reverse was true in the other two States (Michigan and Tennessee). In two States (California and Georgia) only, among users, Hispanics obtained fewer prescriptions than their non-Hispanic counterparts.
- In three of four States, compared to rural dwellers, children residing in urban areas had a decreased probability of obtaining a prescription. Otherwise, the effects of metropolitan residential status on prescription drug utilization were mixed.

2. Probability of Receiving Any Prescription Drugs - Pooled Logistic Models

Table VI-3 summarizes the results of the pooled logistic regression models examining the probability of receiving at least one prescription drug. (See Appendix N for the accompanying detailed pooled logistic regression tables.)

a. Direct Measures of Change Over time and Provider Supply

Change over time occurred in three of four States. For Michigan and Tennessee, there was an increased probability of receiving prescription drugs among children under 21 years of age between 1989 and 1992. In California, the opposite result was found. In Georgia, there was no change over time in the likelihood of obtaining prescription drugs.

The relationship between the year by primary care provider supply interaction term and the probability of receiving prescription drugs was non-significant in all States.

b. Other Medicaid Programmatic and Provider Supply/Access Measures

In general, the impact of the three provider supply/access measures on use of prescription drugs was inconsistent across measures as well as States. For example, results with respect to the shortage area measure were non-significant in all but one State--Georgia. Here, children residing in shortage areas had an decreased likelihood of obtaining at least one prescription drug compared to those living in shortage areas. The ratio of participating clinics per 1,000 population in the county of residence was negatively related to the probability of obtaining prescription drugs in three of four States, meaning as the supply of clinics improved,

TABLE VI-3

LOGISTIC REGRESSION SUMMARY: PROBABILITY OF RECEIVING ANY PRESCRIPTION DRUGS, CHILDREN UNDER 21 YEARS OF AGE

POOLED MODEL INCLUDING INTERACTION TERM AND DUMMY VARIABLE FOR YEAR

Dependent Variable: Use/Non-Use of Prescription Drugs				
Regressor *(X)*	California	Georgia	Michigan	Tennessee
Intercept	-	-	-	-
Age < 12 months	+	+	+	
Age = 1 - 2 years	+	+	+	+
Age = 3 - 6 years	+	-	-	-
Age = 7 - 12 years	-	-	-	-
Black Race	-	-	-	-
Other Race	+	-	-	-
Unknown Race	+	-	-	-
Hispanic Ethnicity	-	-	+	+
Gender	+	+	+	+
Urban Residence	+	-	-	-
Surburban Residence	+	-		
Blind/Disabled	+	+		-
Foster Care	-	-	N/A	-
Poverty-Related	-	+		+
Medically Needy	-	-	-	-
Months Enrolled in Medicaid	+	+	+	+
Months Enrolled in a PCCM Program	N/A	N/A	+	-
User of Preventive Care Visits	+	+	+	+
Shortage Area		-		
Participating Clinics per 1,000 Population	-	+	-	-
Participating Primary Care Providers/Child Medicaid Enrollees	-	-		+
Children with Service Use in both 1989 and 1992	+		+	+
1992 Year Dummy	-		+	+
1992 Year Dummy By Participating Primary Care Providers/Child Medicaid Enrollees				

Plus (+) and minus (-) signs indicate statistically significant coefficients where $p < .05$. Blanks indicate coefficients that are not statistically signficant.

N/A indicates that the variable was unavailable.

Excluded categories: Ages 13+ years, White, Male, Rural, AFDC (AFDC/Foster Care in Michigan), and 1989.

the likelihood of receiving prescriptions decreased. The opposite result was observed in Georgia. Finally, the ratio of participating primary care providers to child Medicaid enrollees in the county of residence was negatively related to the likelihood of obtaining prescription drugs in California and Georgia. Again as the supply of primary care providers improved, the likelihood of obtaining prescriptions decreased. The reverse was true in Michigan.

Information on participation in PCCM programs was available in only two States--Michigan and Tennessee. In Michigan, months of enrollment in a PCCM program was positively related to the receipt of prescription drugs, but the reverse was observed in Tennessee.

Finally, as noted previously, in the short-term, use of preventive services may increase health care utilization if medical problems that would have otherwise gone unattended are instead diagnosed and treated. Our multivariate results are consistent with this hypothesis. In all four States, being a user of preventive care visits was associated with an increased probability of obtaining any prescription drugs.

c. Medicaid Eligibility and Enrollment Characteristics

In all States, both medically needy/other and foster care children were significantly less likely to receive prescription drugs compared to AFDC children. In California and Georgia, blind/disabled children were more likely than AFDC children to obtain at least one prescription drug. The opposite result was observed in Tennessee. Mixed results were observed for poverty-related children. In Georgia and Tennessee, compared to the AFDC group, poverty-related children had an increased probability of obtaining a prescription drug, but the opposite effect was observed in California.

With respect to enrollment duration, across all States, the greater the number of months enrolled in Medicaid within each analysis year, the greater the probability of receiving any prescription drugs. We also identified children with any Medicaid service use in both 1989 and 1992 as a proxy for long-term enrollment. In three of four States (excluding Georgia), this measure was positively associated with obtaining prescription drugs.

d. Demographics and Metropolitan Residential Status

The pattern of findings with respect to the relationship between age and use of prescription drugs was almost identical to that observed between age and diagnostic and treatment visits reported earlier in this chapter. With one exception (Tennessee), infants and toddlers had a higher probability of receiving a prescription compared to adolescents. Also with one exception (California), children in the middle age ranges (three to six and seven to twelve years of age) were less likely than adolescents to receive a prescription drug.

Females had a higher probability of receiving a prescription drug than did males across all four States. This result is identical to that observed for diagnostic and treatment visits.

Findings with respect to race and ethnicity across States were generally mixed. As reported previously with respect to the relationship between race and diagnostic and treatment visits, black children were also significantly less likely than white children to obtain a prescription drug in all four States. While the results with respect to children classified as other or unknown race showed some consistency across States, we interpret these findings with caution given that the coding of these measures appeared to be somewhat unreliable. In three of four States, children classified as being of an other or unknown race had a decreased probability of receiving a prescription drug compared to white children. In California, the opposite pattern was observed. Finally, in California and Georgia, Hispanic children were less likely than non-Hispanics to obtain a prescription, however, the reverse was observed in Michigan and Tennessee.

Compared to rural dwellers, children residing in urban areas had a decreased probability of obtaining a prescription drug in three of four States. The opposite pattern was observed in California. Suburban residence was a significant factor in only two States. In California, suburban children were more likely than rural children to receive a prescription drug. The opposite was found in Georgia.

3. Number of Prescription Drugs Among Users - Pooled Linear Models

Table VI-4 summarizes the results of the pooled linear regression models examining the number of prescriptions received by children with at least one such service. (See Appendix O for the accompanying detailed pooled linear regression tables.)

a. *Direct Measures of Change Over Time and Provider Supply*

In three of four States, there were significant increases in the number of prescription drugs received by users between 1989 and 1992. In Georgia, no change over time was observed.

The relationship between the year by primary care provider supply interaction term and the number of prescriptions among users was significant and negative in only one State--California. Here, while there was no relationship between the ratio of participating primary care providers to child Medicaid enrollees in the county of residence and the number of prescriptions in 1989, by 1992, increases in this ratio were associated with fewer prescriptions among users.

TABLE VI-4

ORDINARY LEAST SQUARES REGRESSION SUMMARY: NUMBER OF PRESCRIPTION DRUGS, USERS UNDER 21 YEARS OF AGE

POOLED MODEL INCLUDING INTERACTION TERM AND DUMMY VARIABLE FOR YEAR

Dependent Variable: Number of Prescription Drugs				
Regressor *(X)*	California	Georgia	Michigan	Tennessee
Intercept	-	+	+	+
Age < 12 months	+		-	-
Age = 1 - 2 years	+	+	-	+
Age = 3 - 6 years	+	-	-	-
Age = 7 - 12 years	-	-	-	-
Black Race	-	-	-	-
Other Race	+		-	-
Unknown Race	+			
Hispanic Ethnicity	-	-		
Gender		+	+	+
Urban Residence	-	-	+	-
Suburban Residence	-	-		+
Blind/Disabled	+	+	+	+
Foster Care	+	+	N/A	
Poverty-Related	-	+		
Medically Needy	-	+	+	
Months Enrolled in Medicaid	+	+	+	+
Months Enrolled in a PCCM Program	N/A	N/A	+	-
User of Preventive Care Visits	+	+	+	+
Shortage Area	+			+
Participating Clinics per 1,000 Population	-	+	-	-
Participating Primary Care Providers/Child Medicaid Enrollees		-		
Children with Service Use in both 1989 and 1992	+	-	-	
1992 Year Dummy	+		+	+
1992 Year Dummy By Participating Primary Care Providers/Child Medicaid Enrollees	-			

Plus (+) and minus (-) signs indicate statistically significant coefficients where $p < .05$. Blanks indicate coefficients that are not statistically signficant.

N/A indicates that the variable was unavailable.

Excluded categories: Ages 13+ years, White, Male, Rural, AFDC (AFDC/Foster Care in Michigan), and 1989.

b. *Medicaid Programmatic and Provider Supply/Access Measures*

Three county-level measures were included in our analyses to examine the effects of provider supply/access on the number of prescriptions among users under twenty-one years of age. In California and Tennessee, users residing in primary care shortage areas had an increased probability of receiving prescription drugs compared to users located in non-shortage areas.

The measure representing participating clinics per 1,000 population in the county of residence was statistically significant in all four States. In three States, the relationship between this measure and use of prescription drugs was negative; thus, as the ratio increased (representing improved access), the likelihood of obtaining a prescription decreased. In Georgia, the opposite trend was observed.

The ratio of participating primary care providers to child Medicaid enrollees in the county of residence was significant in only one State--Georgia. Here as this ratio increased (again indicating better access), the use of prescriptions decreased.

Information on participation in PCCM programs was available in only two States--Michigan and Tennessee. In Michigan, the greater the number of months enrolled in a PCCM program, the greater the number of prescriptions received by children with at least one such service. The reverse was true in Tennessee.

Finally, we also examined the relationship between receipt of any preventive care visits and the number of prescriptions among users. Across all four States, users of preventive care visits obtained significantly more prescriptions than did non-users of preventive care visits.

c. *Medicaid Eligibility and Enrollment Characteristics*

With two exceptions (both in California), when statistically significant relationships were observed, compared to AFDC users of prescription drugs, users in all other eligibility groups obtained more such services. Among users in California, poverty-related children and the medically needy/other group received significantly fewer prescriptions compared to their AFDC counterparts.

With respect to enrollment duration, across all States, the number of months enrolled in Medicaid within each analysis year was significantly and positively related to the number of prescription drugs among users under 21 years of age. We also identified children with any Medicaid service use in both 1989 and 1992 as a proxy for long-term enrollment. This measure was negatively related to the number of prescription drugs received by users in Georgia and Michigan. The reverse pattern was observed in California.

d. *Demographics and Metropolitan Residential Status*

The relationship between age and number of prescriptions among users was inconsistent across States. Infants had fewer prescriptions compared to adolescents in Michigan and Tennessee, but the opposite result was observed in California. Toddlers received more prescriptions than adolescents in three of four States (excluding Michigan for which the reverse was true). Users ages three to six years obtained fewer prescriptions than teens with prescriptions in three of four States (excluding California for which the opposite was observed). Finally, in all four States, users between the ages of seven and twelve years received fewer prescriptions than their adolescent counterparts. With respect to gender, female users obtained more prescriptions than did male users in three of four States (excluding California).

Compared to white users, black users received significantly fewer prescriptions across all four States. Finally, among prescription drug users, Hispanics obtained fewer prescriptions than their non-Hispanic counterparts in California and Georgia.

The pattern of findings with respect to metropolitan residential status was primarily specific to each State. In California and Georgia, both urban and suburban users received significantly fewer prescriptions than did their rural counterparts. Results were mixed in Michigan and Tennessee.

D. Inpatient Care - Multivariate Analyses

We focus our multivariate analysis of inpatient care on children between the ages of one and twelve years. Infants (< 12 months of age) in the analytic files were born during the analysis year and thus received inpatient care for birth. In many cases, this care was paid for by Medicaid and was represented in our analytic files. Likewise, many female teens (ages 13 to 20 years) had deliveries during each analysis year. The primary goal of our inpatient care analyses was to understand factors determining illness-related inpatient care. However, identifying inpatient delivery claims for exclusion was beyond the scope of this project. Thus, all infants and adolescents are excluded from our inpatient multivariate analyses due to these data issues.

1. Highlights of the Pooled Multivariate Results for Inpatient Care

We summarize the major findings for inpatient care in this section according to the four major classes of explanatory variables used in our multivariate models.

With respect to direct measures of change over time and provider supply:

- For preventive care services (see Chapter V), change over time was often positive, indicating increased use of well-child visits overall, EPSDT screening visits alone and age-appropriate immunizations by 1992. In contrast, across all four States, the probability of an inpatient stay

decreased over time between 1989 and 1992. Only in Georgia was there a significant decrease in the number of inpatient days among children with hospitalizations between 1989 and 1992.

- The year by primary care provider supply interaction term was non-significant across all four States, indicating no change over time in the effect of the ratio of participating primary care providers to child Medicaid enrollees in the county of residence on the receipt of any inpatient stays or the number of days spent in the hospital among users.

With respect to other Medicaid programmatic and provider supply/access measures:

- For the most part, neither the primary care shortage area measure nor the ratio of participating primary care providers to child Medicaid enrollees in the county of residence had a significant impact on receipt of inpatient stays nor the number of inpatient days among children with hospitalizations.

- Data on PCCM participation were available for only two States (Michigan and Tennessee). In Michigan only, the greater the number of months enrolled in a PCCM program, the lesser the likelihood of receiving at least one inpatient stay. This measure had no effect on the number of days hospitalized among children with inpatient stays.

- Finally, as noted previously, in the short-term, use of preventive services may increase health care utilization if medical problems that would have otherwise gone unattended are instead diagnosed and treated. Our multivariate results are consistent with this hypothesis. In all four States, being a user of preventive care visits was associated with an increased probability of having an inpatient stay vis-à-vis children without preventive care visits. Among hospitalized children in California only, users of preventive care visits had significantly fewer inpatient days compared to non-users of preventive care visits.

With respect to Medicaid eligibility and enrollment characteristics

- When statistically significant effects were observed, compared to the AFDC group, all other eligibility groups were more likely to have at least one inpatient stay. Similarly, among children with hospitalizations, when significant findings were obtained, those classified as blind/disabled, medically needy/other and foster care had more inpatient days than did those classified as AFDC.

- With respect to enrollment duration, across all States, the number of months enrolled in Medicaid during each analysis year was positively related to both the probability of having an inpatient stay as well as the number of days spent in the hospital among those with stays.

- We also identified children with Medicaid service use in both 1989 and 1992 as a proxy for long-term enrollment. This measure was positively associated with obtaining inpatient care only in Michigan. It was negatively related to the number of days hospitalized among users in California only.

With respect to demographics and metropolitan residential status:

- In all four States, compared to older children (ages seven to twelve years), toddlers were more likely to obtain at least one inpatient stay and, among users, had more days spent in the hospital. Also, in all four States, children ages three to six years were more likely than the older children to be hospitalized at least once, and in two States (California and Tennessee) received more inpatient days.

- Across all four States, males were more likely than females to have an inpatient stay. However, in three of four States (excluding Michigan), gender was not significantly related to the number of days hospitalizations among those with stays.

- In two States (Georgia and Tennessee), compared to white children, blacks were significantly less likely to have an inpatient stay. In only one State (Michigan), users who were black had more inpatient days than did their white counterparts.

- Compared to non-Hispanic children, Hispanics had an increased probability of receiving inpatient care in two States (California and Tennessee). However, Hispanic ethnicity had no impact on the number of days spent in the hospital among children with inpatient stays.

- The effects of metropolitan residential status on receipt of any inpatient care varied by State. However, these measures were not significantly related to the number of days hospitalized among children with at least one inpatient stay.

2. Probability of Receiving Any Inpatient Stays - Pooled Logistic Models

Table VI-5 summarizes the results of the pooled logistic regression models examining the probability of receiving at least one inpatient stay. (See Appendix P for the accompanying detailed pooled logistic regression tables.)

a. *Direct Measures of Change Over Time and Provider Supply*

For preventive care services (see Chapter V), change over time was often positive, indicating increased use of well-child visits overall, EPSDT screening visits alone and age-appropriate immunizations by 1992. In contrast, across all four States, the probability of an inpatient stay decreased over time between 1989 and 1992.

The year by primary care provider supply interaction term was non-significant across all four States, indicating no change over time in the effect of the ratio of participating primary care providers to child Medicaid enrollees in the county of residence on the receipt of any inpatient stays.

b. *Other Medicaid Programmatic and Provider Supply/Access Measures*

In our inpatient multivariate models, we examined the effects of two county-level measures of provider supply/access on receipt of such care--designation as a primary care shortage area and the ratio of participating primary care providers to child Medicaid enrollees.[21] Results with respect to the shortage area

[21] In our inpatient care models, we dropped the measure representing the ratio of participating clinics per 1,000 population because it was less relevant to the issues of access or capacity for delivering inpatient care as opposed to outpatient care.

TABLE VI-5

LOGISTIC REGRESSION SUMMARY: PROBABILITY OF RECEIVING ANY INPATIENT CARE, CHILDREN AGED 1 TO 12 YEARS

POOLED MODEL INCLUDING INTERACTION TERM AND DUMMY VARIABLE FOR YEAR

	Dependent Variable: Use/Non-Use of Inpatient Stays			
Regressor *(X)*	California	Georgia	Michigan	Tennessee
Intercept	-	-	-	-
Age = 1 - 2 years	+	+	+	+
Age = 3 - 6 years	+	+	+	+
Black Race		-		-
Other Race	-			-
Unknown Race	+	+		
Hispanic Ethnicity	+			+
Gender	-	-	-	-
Urban Residence		-	+	-
Surburban Residence		-	+	
Blind/Disabled	+	+	+	+
Foster Care	+		N/A	
Poverty-Related	+	+		
Medically Needy	+	+	+	+
Months Enrolled in Medicaid	+	+	+	+
Months Enrolled in a PCCM Program	N/A	N/A	-	
User of Preventive Care Visits	+	+	+	+
Shortage Area	+			-
Participating Primary Care Providers/Child Medicaid Enrollees	+	-		
Children with Service Use in both 1989 and 1992			+	
1992 Year Dummy	-	-	-	-
1992 Year Dummy By Participating Primary Care Providers/Child Medicaid Enrollees				

Plus (+) and minus (-) signs indicate statistically significant coefficients where $p < .05$. Blanks indicate coefficients that are not statistically significant.

N/A indicates that the variable was unavailable.

Excluded categories: Ages 7 - 12 years, White, Male, Rural, AFDC (AFDC/Foster Care in Michigan), and 1989.

measure were inconsistent across States. Only in California did children living in primary care shortage areas have a higher probability of having an inpatient stay compared to children residing in non-shortage areas. The opposite trend was observed in Tennessee. This measure was not statistically significant in Georgia or Michigan.

Results with respect to the ratio of participating primary care providers to child Medicaid enrollees in the county of residence were also inconsistent across States. In California, increases in this ratio led to a greater probability of having an inpatient stay. The opposite result occurred in Georgia. This measure was not statistically significant in Michigan or Tennessee.

Information on participation in PCCM programs was available in only two States--Michigan and Tennessee. In Michigan only, the greater the number of months enrolled in a PCCM program, the lesser the likelihood of receiving at least one inpatient stay.

Finally, as noted previously, in the short-term, use of preventive services may increase health care utilization if medical problems that would have otherwise gone unattended are instead diagnosed and treated. Our multivariate results are consistent with this hypothesis. In all four States, being a user of preventive care visits was associated with an increased probability of having an inpatient stay vis-à-vis children without preventive care visits.

c. Medicaid Eligibility and Enrollment Characteristics

When statistically significant effects were observed, compared to the AFDC group, all other eligibility groups were more likely to receive at least one inpatient stay across all four study States.

With respect to enrollment duration, across all States, the greater the number of months enrolled in Medicaid within each analysis year, the greater the probability of receiving at least one inpatient stay. We also identified children with any Medicaid service use in both 1989 and 1992 as a proxy for long-term enrollment. This measure was positively associated with obtaining inpatient care only in Michigan.

d. Demographics and Metropolitan Residential Status

Age had a clear, consistent impact on the receipt of inpatient care across all four States. Toddlers and children ages three to six years were more likely to obtain at least one inpatient stay than older children (ages seven to twelve years).

While gender typically had no impact on the use of preventive care services (see Chapter V), it did have a consistent effect on the use of inpatient care. Across all four States, males were more likely than females to have an inpatient stay.

Findings with respect to race and ethnicity across States were generally mixed. In Georgia and Tennessee only, black children were significantly less likely than white children to have an inpatient stay. Compared to non-Hispanic children, Hispanics had an increased probability of receiving inpatient care in California and Tennessee.

The effects of metropolitan residential status on receipt of inpatient care varied by State. In Georgia, urban and suburban dwellers had a decreased probability of an inpatient stay compared to children residing in rural areas. The opposite trend was observed in Michigan. In Tennessee, children in urban locales only were less likely than rural children to have an inpatient stay.

3. Number of Inpatient Days Among Users - Pooled Linear Models

Table VI-6 summarizes the results of the pooled linear regression models examining the number of inpatient days received by children with at least one hospitalization. (See Appendix Q for the accompanying detailed pooled linear regression tables.)

a. Direct Measures of Change Over Time and Provider Supply

Statistically significant change over time with respect to the number of inpatient days received by children with hospitalizations between one and twelve years of age was found in only one State. In Georgia, there was a significant decrease in the number of inpatient days among users between 1989 and 1992.

The year by primary care provider supply interaction term was non-significant across all four States, indicating no change over time in the effect of the ratio of participating primary care providers to child Medicaid enrollees in the county of residence on the number of inpatient days among users.

b. Other Medicaid Programmatic and Provider Supply/Access Measures

Across all four States, neither the primary care shortage area measure nor the ratio of participating primary care providers to child Medicaid enrollees in the county of residence had a significant impact on the number of inpatient days among children with hospitalizations.

TABLE VI-6

ORDINARY LEAST SQUARES REGRESSION SUMMARY: NUMBER OF INPATIENT DAYS, USERS AGED 1 TO 12 YEARS

POOLED MODEL INCLUDING INTERACTION TERM AND DUMMY VARIABLE FOR YEAR

Dependent Variable: Number of Inpatient Days				
Regressor *(X)*	California	Georgia	Michigan	Tennessee
Intercept	+	+	+	+
Age = 1 - 2 years	+	+	+	+
Age = 3 - 6 years	+			+
Black Race			+	
Other Race				+
Unknown Race	+	+		+
Hispanic Ethnicity				
Gender			-	
Urban Residence				
Surburban Residence				
Blind/Disabled	+	+	+	+
Foster Care	+		N/A	
Poverty-Related				
Medically Needy	+		+	
Months Enrolled in Medicaid	+	+	+	+
Months Enrolled in a PCCM Program	N/A	N/A		
User of Preventive Care Visits	-			
Shortage Area				
Participating Primary Care Providers/Child Medicaid Enrollees				
Children with Service Use in both 1989 and 1992	-			
1992 Year Dummy		-		
1992 Year Dummy By Participating Primary Care Providers/Child Medicaid Enrollees				

Plus (+) and minus (-) signs indicate statistically significant coefficients where $p < .05$. Blanks indicate coefficients that are not statistically significant.

N/A indicates that the variable was unavailable.

Excluded categories: Ages 7 - 12 years, White, Male, Rural, AFDC (AFDC/Foster Care in Michigan), and 1989.

Information on participation in PCCM programs was available in only two States--Michigan and Tennessee. This measure had no significant effect on the number of days hospitalized among children with inpatient stays.

Finally, we also examined the relationship between receipt of any preventive care visits and the number of inpatient days among users. Among hospitalized children in California only, users of preventive care visits had significantly fewer inpatient days compared to non-users of preventive care visits.

c. Medicaid Eligibility and Enrollment Characteristics

When statistically significant relationships were observed, among children with hospitalizations, those classified as blind/disabled, medically needy/other and foster care had more inpatient days than did those classified as AFDC. Poverty-related and AFDC enrollees did not differ in the number of inpatient days received by users.

With respect to enrollment duration, across all States, the number of months enrolled in Medicaid within each analysis year was significantly and positively related to the number of inpatient days among children with hospitalizations. We also identified children with any Medicaid service use in both 1989 and 1992 as a proxy for long-term enrollment. This measure was negatively related to the number of inpatient days received by users in California only.

d. Demographics and Metropolitan Residential Status

In all four States, toddlers with hospitalizations had more inpatient days than did hospitalized children between the ages of seven and twelve years. Likewise, in two of four States (California and Tennessee), users ages three to six years also obtained more inpatient days than those with hospitalizations who were seven to twelve years of age.

In three of four States, gender was not significantly related to the number of inpatient days received by users. In Michigan, males with at least one inpatient stay spent more days in the hospital than did their female counterparts.

In Michigan only, users who were black had more inpatient days than did their white counterparts. Hispanic ethnicity had no impact on the number of days spent in the hospital among children with inpatient stays.

Metropolitan residential status was not significantly related to the number of days hospitalized among children with at least one inpatient stay.

VII. CHILDREN'S DENTAL SERVICES UNDER MEDICAID

In this chapter, we present our findings on children's dental service utilization in the Medicaid program. With descriptive statistics and multivariate techniques, we analyzed dental service utilization, in general, as well as service use in specific categories: diagnostic, preventive, therapeutic, and emergency services. As with our discussion in Chapters V and VI in this report, we first present descriptive analyses. The descriptive analyses of dental service utilization have not been reported previously; consequently, we discuss these analyses in detail in this chapter. For dental services in general, and for diagnostic, preventive, and therapeutic service use, we discuss our findings from the logistic and ordinary least squares regression models in which we pool 1989 and 1992 data to assess changes over time for each State.

As with well child and diagnosis and treatment services, we employed a two-part estimation strategy for analyzing utilization. We estimated the probability of using any dental services and each type of service--diagnostic, preventive, and therapeutic. To assess factors contributing to variation in the intensity of service use, conditional on use, we used ordinary least squares regression. Our results are again organized according to four major classes of explanatory variables: (1) direct measures of change over time and provider supply, (2) other Medicaid programmatic and provider supply/access measures, (3) Medicaid eligibility and enrollment characteristics, and (4) demographics and metropolitan residential status.

While not reported in this chapter, we estimated models in which we pooled data from all States using all dependent variables. Using dummy variables for Georgia, Michigan, and Tennessee to assess differences among States and in comparison to California, we found statistically significant differences across all models except in 1989 for the case of the probability of receiving any therapeutic services and the number of dental services received. The dummy variable for Michigan was not statistically significant indicating no statistically significant difference between Michigan and California.

A. Descriptive Analysises of Dental Service Utilization

In our descriptive analyses of dental service utilization, we characterized recipients of dental services. We also computed the percentage of Medicaid child enrollees who received dental services, the enrollment adjusted percentage of users in the Medicaid enrolled child population, and the percentage of users according to county type where counties were characterized according to the concentration of dental providers. These descriptive statistics are presented for both 1989 and 1992, for each of the four study States. Detailed tables for these descriptive analyses are included in Appendix R.

1. Characteristics of Dental Service Recipients

a. *Demographic Characteristics*

In general, most Medicaid enrolled children who are recipients of dental services are in the 7-12 and 13-21 age groups. For all categories of service in all four study States, 60-70 percent of the recipients were at least seven years old. Among recipients of any dental care, less than 5 percent of the recipients were in the infant and toddler age categories, which is not surprising since dental referrals are required for children beginning at age three in the Medicaid program.[22] The age distribution of dental service recipients was quite similar for diagnostic, preventive, and therapeutic services except for preventive services in California. In California in 1989 and 1992, 63 percent of the preventive service recipients were in the 13-20 year age category compared with 33-34 percent in that age group for any dental care services.

In all States, Medicaid enrolled child recipients of dental services were more likely to be female than male for all categories of services. While very few children received orthodontic services, an even higher percentage of these recipients were female in California and Tennessee. For example, in California in 1992, 53 percent of the recipients were female whereas 60 percent of the recipients of orthodontic services were female. Sixty-two percent of the recipients of orthodontic services in Tennessee were female compared with 53 percent of the recipients of any dental care services in 1992.

The distribution of dental care recipients by race was similar in California and Georgia, with nearly two-thirds of the recipients in the non-white category in 1992. In Michigan, however, we observed the opposite pattern; 65 percent of the recipients of any dental care were white in 1992. In Tennessee, the recipients were somewhat more evenly split between these two race categories with 41 percent of the recipients in the non-white category in 1992. Recipients of orthodontic services were far more likely to be white than non-white in all four study States despite the different pattern that we observed for receipt of any dental care, particularly in California and Georgia. In 1992, 62 percent and 85 percent of the recipients of orthodontic services in California and Georgia, respectively, were white.

b. *Medicaid Eligibility*

The distribution of recipients across Medicaid eligibility categories generally reflects the distribution of enrollees among the eligibility categories. In California, most recipients were in the AFDC cash eligibility category in 1989 and 1992, but the percentage of recipients in this category decreased while the percentage

---

[22]The American Academy of Pediatric Dentistry recommends that children in these age groups receive a complete clinical oral examination and diagnostic tests to assess oral growth and development (AAPD 1994-95).

of recipients in the medically needy category increased slightly over this time period. In Georgia, most recipients were in the AFDC cash and poverty related eligibility categories, and over time there was an increase in the percentage of recipients in the poverty related category with a corresponding decrease in the percentage of recipients in the AFDC eligibility category. Over the 1989-1992 period, the pattern of change in the distribution of recipients among eligibility categories in Tennessee was similar to that in Georgia. In Michigan, about three quarters of the recipients were in the AFDC cash eligibility group in 1989, and that percentage declined to 68 percent in 1992. At the same time, the percentage of recipients in the poverty related eligibility group increased from 0.5 to 6.0 and that in the medically needy group increased from 19.3 to 22.3.

c. *Metropolitan Status*

The distribution of dental service recipients by degree of urbanization varied in the four Study states. In California, nearly three-quarters of the dental care recipients in 1992 were in counties characterized as urban and about one-fifth of the recipients were in suburban counties. Between 1989 and 1992, there was an increase in the proportion of recipients in urban areas with a corresponding decrease in suburban recipients; the proportion of recipients who resided in rural counties was unchanged. In Georgia, however, about almost half of the recipients were in rural counties with only about one-fifth of the recipients located in urban areas. Recipients in Michigan were more evenly distributed among urban, suburban, and rural areas whereas in Tennessee recipients were concentrated in suburban and rural areas with approximately one-fifth in urban areas.

2. Medicaid Children's Use of Dental Care by Selected Characteristics and Preventive Medical Care Use

Fewer than one-third of child enrollees received any dental care in any of the four study States, even in 1992. In California only 20 percent of children enrolled in the Medicaid program received any dental care in 1989, and we found almost no change in the percentage of children receiving any dental care between 1989 and 1992. In 1992 the percentage of children in the Medicaid program in California who had received any dental care had increased to only 20.6. We found the largest increase in dental service utilization among Medicaid enrolled children in Tennessee; however, the percentage of recipients was only 26.7 in 1989 and 29.5 in 1992.

a. *Demographic Characteristics*

Less than one percent of infants and five percent of toddlers received any dental care in all study States, except in Tennessee. By 1992 in Tennessee, the percentage of toddlers who had received any dental care had increased from four to seven percent. Among young children and adolescents, the highest

utilization rate was for children in the 7-12 year age group. In 1992, the percentage of children who had received any dental care ranged from 32 percent in California to 44 percent in Tennessee for 7-12 year olds.

The percentage of children who had received any dental care was higher among young children and adolescents who had received a preventive medical care visit than for children in those age groups who had not received any well child care. For infants and toddlers, however, the dental utilization rate was not appreciably higher if they had received preventive medical care. Among 7-12 year olds who had received preventive care, utilization rates were as high as 64 and 65 percent in Tennessee and Georgia, respectively. These rates in 1992 reflect slight decreases over the rates for this age group in these two States in 1989. Utilization in California, even among older children who had received preventive care, was much lower than in the other three States. The rates were particularly low for preventive dental care services. In 1992 only 6.6 percent of 7-12 year-olds and 15.5 percent of 13-20 year-olds with any preventive medical care use had received any preventive dental care services.

With respect to gender, only in Georgia did we find any large difference between users and non-users of preventive medical care in the percentage of children who had received any dental care. For example, in 1989, among recipients of preventive medical care, the percentage of female children who had received any dental care was 42 percent while only 24 percent of female children had received dental care among non-users of preventive medical care. In 1992, however, only 33 percent of female children who had received any preventive medical care had received any dental care.

There was very little difference between the utilization rates for white and non-white Medicaid enrolled children in all States. In 1992, there were percentage point differences in utilization rates of four and five points in California and Tennessee, respectively. Utilization rates were higher for white children in California (24%) but for non-white children in Tennessee (33%). Among users and non-users of preventive medical care, utilization rates by race categories were quite similar.

b. *Medicaid Eligibility*

Among Medicaid eligibility categories, utilization rates for any dental care were highest for the foster care group in California, Georgia, and Tennessee. In Michigan, the percentage of children who received any dental care was highest for the AFDC cash and medically needy categories. In all States, the utilization rate for the poverty related eligibility group were the lowest ranging from 6 percent in California to 19 percent in Tennessee in 1992.

Between users and non-users of preventive medical care, we found that in California and Georgia the percentage of foster care and blind/disabled children who had received dental care was much higher for users of preventive medical care. There was very little difference in dental care utilization rates care for the

AFDC and poverty related eligibility categories, between users and non-users of preventive medical care. For the foster care and blind/disabled eligibility categories, the utilization rates were higher among preventive medical care users.

c. *Metropolitan Status*

Utilization rates were similar among urban, suburban, and rural areas. We found some differences in utilization rates in Georgia and Tennessee where rates ranged from 19 (urban) to 31 (rural) percent in Georgia and 29 (rural) to 35 (urban) percent in Tennessee in 1992. We did not observe utilization rate patterns that indicated utilization rates by metropolitan status were generally different among users and non-users of preventive medical care.

3. Enrollment Adjusted Utilization of Dental Services

To assess utilization of particular services, we computed service use per person-year-enrolled by category of services and for selected services within diagnostic, preventive, and therapeutic service categories. These findings are presented in Appendix R. Children received an average of 1.7 (California) to 2.2 (Tennessee) individual services in any of these three categories during 1992. In 1992, average payments for diagnostic, preventive, or therapeutic services were highest in Georgia ($45.39) and lowest in Michigan ($27.65).

In general, children received very few preventive dental services, particularly in California. We found that claims per person-year-enrolled for this category of service in 1992 ranged from only .06 in California to .41 in Georgia, .43 in Michigan, and .42 in Tennessee. Preventive dental services include prophylaxis cleaning, topical application of fluoride, as well as sealants. We found claims for sealants only in Michigan and Tennessee.

The average number of diagnostic and therapeutic services received was much higher than for preventive services. For example, in California in 1992, we found .70 claims per person-year-enrolled for diagnostic services and .90 claims per person-year-enrolled for therapeutic services. Within the therapeutic service category, we computed average utilization for restoration of carious lesions to be .60 claims per person year enrolled. These findings suggest that children are more likely to receive services when in need of treatment. With respect to average utilization for diagnostic and therapeutic dental services compared with preventive dental services, we found similar patterns in the other three States.

4. Dental Service Utilization and Concentration of Dental Providers

To assess service utilization with respect to provider concentration, we identified counties as high density, medium density, and low density based on the ratio of the total child population to total dentists. We used data from the American Dental Association to compute counts of dental providers for each county. Population counts were obtained from the Area Resource File. The ratio was 5,000 or greater for low density counties, 2,501-4,999 for medium density counties, and 2,500 or less for high density counties. The percentage of children receiving dental services was greatest in high density counties and smallest in low density counties in all States except California. Nevertheless, there were decrease in the percentage of children receiving dental care in the high density counties and increases in the medium and low density counties in all States except Tennessee.

B. Dental Care Services -- Multivariate Analyses

In studying utilization of dental services, we restricted our multivariate analysis to children over three years of age since under Medicaid program dental referrals are required for children beginning at age three. Consequently, the analyses discussed here include only those children for whom at least one dental visit was expected.

Our general model specification is similar to that employed for the analyses of preventive medical care, and diagnosis and treatment services. We included two variables to control for access to dental care-- the ratio of participating dentists to Medicaid child enrollees and a dummy variable for the presence of an institutional dental provider in the county. To assess changes over time, we included a dummy variable for 1992 and a variable interacting the 1992 year dummy with the ratio of participating dentists to child enrollees. Again, our objective is to assess whether utilization differed over time, in general, and whether changes over time in the supply of dentists with respect to the Medicaid enrolled child population affected the probability of receiving dental care services and, among users of dental care, the number of services received.

1. Highlights of the Pooled Multivariate Results for Dental Care Services

Many of the same factors that influenced the probability of receiving any dental care services and services in specific categories among all children over three years of age also determined the number of services received among users.

With respect to direct measures of change over time and provider supply:

- In two States (California and Tennessee), there was a significant increase in the probability of any use of dental care in 1992 compared to 1989. In California and Michigan, there was a significant increase in the number of dental care services received among users in 1992 compared to 1989.

- In Tennessee and California, there was an increase in the probability of receiving any preventive or therapeutic services in 1992 over 1989, and in Tennessee there was also an increase in the probability of receiving any diagnostic services.

- With respect to the number of diagnostic, preventive, or therapeutic services received among users of those services, there were increases as well as decreases in 1992 compared with 1989 across the four States. Among recipients of any diagnostic and preventive dental services in Michigan, the number of services increased in 1992. We also found increases in the number of diagnostic and therapeutic services among users in California in 1992 compared with 1989. In Tennessee, however, we found decreases in the number of diagnostic and therapeutic services among users in 1992 compared with 1989.

- In California, the effect of increases in the county-level ratio of participating dentists to Medicaid child enrollees on the probability of receiving any dental care was greater in 1992 compared to 1989. In Tennessee, however, the effects of increases in this ratio were less in 1992 compared to 1989.

- Where statistically significant in the equations modeling the probability of use of diagnostic, preventive, or therapeutic services, we found that the effect of increases in the dental provider to child enrollee ratio in 1992 dampened any increase in the probability of use that could be attributed to increases in the ratio, in general.

  With respect to other Medicaid programmatic and provider supply/access measures:

- The presence of an institutional dental provider increased the likelihood of receiving any dental care, and diagnostic and preventive dental services in Tennessee.

- In the Michigan, one of the two States for which data on months of enrollment in a PCCM program were available, we found that this factor was significantly related to the probability of receiving any dental care, and diagnostic and preventive dental services. In Tennessee, however, the greater the number of months of PCCM enrollment, the less likely children were to receive therapeutic dental services.

- In all four states, we found evidence that preventive medical care visits increase the probability that Medicaid enrolled children will receive all categories of dental care services. We also found that, among users, preventive care visits increased the number of all dental services received except for preventive dental services in California; however, preventive care visits decreased the number of dental services received in Tennessee.

With respect to Medicaid eligibility and enrollment characteristics

- Compared to AFDC children, children in the blind/disabled and poverty related eligibility groups were less likely to receive dental care services.

- Across all States, the longer children were enrolled in Medicaid during the year, the more likely they were to receive all types of dental services. Among users, however, duration of enrollment had a positive and statistically significant effect on intensity of service use for dental care, in general, and diagnostic dental services among all States. For preventive dental services, an increase in duration of enrollment was related to a greater number of preventive services received in all states except California. Only in Michigan did a greater number of months enrolled increase the number of therapeutic dental services received.

With respect to demographics and metropolitan residential status:

- Across all four States, when all other measures were held constant, children aged seven to 12 years were more likely than adolescents to receive at least one dental service. Similarly, they were more likely to receive diagnostic and preventive dental services with one exception--preventive services in California for which they were less likely than the older children to receive services. With respect to therapeutic services, these children were more likely than older children to receive services in all States except Georgia. In all four States, we found that this age group had a greater intensity of use of preventive dental services than did the 13-20 age group.

- Almost without exception, black children were significantly less likely than white children to have any dental care. Only in Tennessee, for preventive dental care, did we find that black children had a higher probability of service use than white children.

- In California and Michigan, Hispanic children were significantly less likely than non-Hispanics to receive any type of dental service. Among users of dental services, while Hispanic children received fewer services overall and fewer diagnostic services in California as well as fewer therapeutic services in Michigan and Tennessee, we found Hispanic ethnicity to be positively related to the number of preventive dental services received in Michigan.

- The pattern of statistically significant results with respect to metropolitan residential status was generally State-specific.

2. Probability of Receiving Dental Services -- Pooled Logistic Models

Tables VII-1 through VII-4 summarize the results of the pooled analyses of the probability receiving dental services; detailed tables with parameter estimates are included in Appendix S.

a. Direct Measures of Change Over Time and Provider Supply

We did not find strong evidence that in 1992 compared to 1989 the likelihood of receiving dental care had increased for Medicaid enrolled children. In fact, controlling for other factors, we found only in California and Tennessee that, among all categories of service studied, the probability of service use generally increased over this time period.

Even more striking is our finding that our measure for provider supply relative to the child enrollee population had very little positive impact on the probability of service use *over time*. While we did find that increases in the supply of participating providers relative to the child enrollee population were associated with an increased probability of service use, in some cases and only in California and Tennessee, we did not find that this effect was enhanced over time. This finding suggests that any efforts to increase children's utilization of dental care through increasing provider participation in the Medicaid program between 1989 and 1992, as measured by the effect of the interaction term included in the pooled equations on the probability of any service use, did not achieve overwhelming success. In fact, we found that in Tennessee, any positive impact of increases in the supply of participating providers relative to enrollees in the child population on the likelihood of service use for all services studied decreased over time.

TABLE VII-1

LOGISTIC REGRESSION SUMMARY: PROBABILITY OF RECEIVING ANY DENTAL SERVICES, CHILDREN OVER 3 YEARS OF AGE

POOLED MODEL INCLUDING INTERACTION TERM AND DUMMY VARIABLE FOR YEAR

Dependent Variable: DENTFLG				
Regressor *(X)*	**California**	**Georgia**	**Michigan**	**Tennessee**
Intercept	-	-	-	-
Age 3-6 Years	-	-	-	-
Age 7-12 Years	+	+	+	+
Black Race	-	-	-	-
Other Race	+			-
Unknown Race	-	-	-	
Hispanic Ethnicity	-		-	
Female	+	+	+	+
Urban Residence	+	-	-	
Suburban Residence	+	-	-	+
Blind/Disabled	-	-	-	-
Foster Care	+	+	NA	+
Poverty-Related	-		-	-
Medically Needy	-	+	+	-
Months Enrolled in Medicaid	+	+	+	+
Months Enrolled in a PCCM Program	NA	NA	+	
Well Child Visit	+	+	+	+
Children with data in both 1989 and 1992	+	-	+	+
Participating Dentists to Medicaid Child Enrollees	+			+
Dental Clinic in County	NA	NA		+
1992 Year Dummy	+			+
1992*Dentists/Enrollees	+			-

Plus (+) and minus (-) signs indicate statistically significant coefficients where p < .05 or better. Blanks indicate coefficients that are not statistically significant

N/A indicates that the variable was not available.

Excluded categories: Ages 13 - 20 years, White, Male, Rural, AFDC/Foster Care, and 1989.

TABLE VII-2

LOGISTIC REGRESSION SUMMARY: PROBABILITY OF RECEIVING ANY DIAGNOSTIC DENTAL SERVICES, CHILDREN OVER 3 YEARS OF AGE

POOLED MODEL INCLUDING INTERACTION TERM AND DUMMY VARIABLE FOR YEAR

Dependent Variable: DIAGFLG				
Regressor *(X)*	California	Georgia	Michigan	Tennessee
Intercept	-	-	-	-
Age 3-6 Years	-	-	-	-
Age 7-12 Years	+	+	+	+
Black Race	-	-	-	
Other Race	+			-
Unknown Race	-		-	
Hispanic Ethnicity	-		-	
Female	+	+	+	+
Urban Residence	+	-	-	
Suburban Residence	+	-	-	+
Blind/Disabled	-	-	-	-
Foster Care	+	+	NA	+
Poverty-Related	-		-	-
Medically Needy	-	+	+	-
Months Enrolled in Medicaid	+	+	+	+
Months Enrolled in a PCCM Program	NA	NA	+	
Well Child Visit	+	+	+	+
Children with data in both 1989 and 1992	+	-	+	+
Participating Dentists to Medicaid Child Enrollees	+			+
Dental Clinic in County	NA	NA		+
1992 Year Dummy				+
1992*Dentists/Enrollees				-

Plus (+) and minus (-) signs indicate statistically significant coefficients where p < .05 or better. Blanks indicate coefficients that are not statistically significant

N/A indicates that the variable was not available.

Excluded categories: Ages 1 - 2 years, White, Male, Rural, AFDC/Foster Care, and 1989.

TABLE VII-3

LOGISTIC REGRESSION SUMMARY: PROBABILITY OF RECEIVING ANY PREVENTIVE DENTAL SERVICES, CHILDREN OVER 3 YEARS OF AGE

POOLED MODEL INCLUDING INTERACTION TERM AND DUMMY VARIABLE FOR YEAR

Dependent Variable: PREVFLG				
Regressor *(X)*	**California**	**Georgia**	**Michigan**	**Tennessee**
Intercept	-	-	-	-
Age 3-6 Years	-	-	+	-
Age 7-12 Years	-	+	+	+
Black Race	-	-	-	+
Other Race	+			-
Unknown Race	-		-	
Hispanic Ethnicity	-		-	
Female	+		+	+
Urban Residence	+	-		+
Suburban Residence	+		-	+
Blind/Disabled	+	-	-	-
Foster Care	+	+	NA	+
Poverty-Related	-		-	-
Medically Needy	+	+	+	-
Months Enrolled in Medicaid	+	+	+	+
Months Enrolled in a PCCM Program	NA	NA	+	
Well Child Visit	+	+	+	+
Children with data in both 1989 and 1992	-		+	+
Participating Dentists to Medicaid Child Enrollees	+			+
Dental Clinic in County	NA	NA		+
1992 Year Dummy	+			+
1992*Dentists/Enrollees				-

Plus (+) and minus (-) signs indicate statistically significant coefficients where $p < .05$ or better. Blanks indicate coefficients that are not statistically significant

N/A indicates that the variable was not available.

Excluded categories: Ages 1 - 2 years, White, Male, Rural, AFDC/Foster Care, and 1989.

TABLE VII-4

LOGISTIC REGRESSION SUMMARY: PROBABILITY OF RECEIVING ANY THERAPEUTIC DENTAL SERVICES, CHILDREN OVER 3 YEARS OF AGE

POOLED MODEL INCLUDING INTERACTION TERM AND DUMMY VARIABLE FOR YEAR

Dependent Variable: THERFLG				
Regressor *(X)*	**California**	**Georgia**	**Michigan**	**Tennessee**
Intercept	-	-	-	-
Age 3-6 Years	-	-	-	-
Age 7-12 Years	+		+	+
Black Race	-	-	-	-
Other Race	+			
Unknown Race	-		-	-
Hispanic Ethnicity	-	-	-	
Female	+	+	+	+
Urban Residence	+	-	-	
Suburban Residence	+		-	+
Blind/Disabled	-	-	-	-
Foster Care		+	NA	
Poverty-Related	-			-
Medically Needy	-	+	+	
Months Enrolled in Medicaid	+	+	+	+
Months Enrolled in a PCCM Program	NA	NA		-
Well Child Visit	+	+	+	+
Children with data in both 1989 and 1992	+	-	+	
Participating Dentists to Medicaid Child Enrollees				+
Dental Clinic in County	NA	NA	-	
1992 Year Dummy	+			+
1992*Dentists/Enrollees	-			-

Plus (+) and minus (-) signs indicate statistically significant coefficients where p < .05 or better. Blanks indicate coefficients that are not statistically significant

N/A indicates that the variable was not available.

Excluded categories: Ages 1 - 2 years, White, Male, Rural, AFDC/Foster Care, and 1989.

b. Other Medicaid Programmatic and Provider Supply/Access Measures

Preventive medical care visits increased the likelihood that children received dental care. This finding was consistent across all four States, and for all categories of service.

We had data on months enrolled in a PCCM program in Michigan and Tennessee. For any dental service and diagnostic services, longer enrollment in a PCCM program increased the likelihood of receiving dental services in Michigan. In Tennessee, however, we found that an increase in the number of months enrolled in a PCCM program decreased the probability of receipt of therapeutic dental services.

We expected that greater access to dental services through the presence of non-office based dental providers would increase the likelihood of service use among children. For those States with institutional providers in both 1989 and 1992 (Michigan and Tennessee), we found that an institutional provider in the county increased the likelihood of receipt of dental services in Tennessee but not in Michigan.

c. Medicaid Eligibility and Enrollment Characteristics

Compared with children in the AFDC eligibility group, those in the blind/disabled and poverty-related groups were generally less likely to have received any dental services as well as the specific categories of service that we studied in most States. Foster care children, on the other hand, were more likely than AFDC children to have received services.

Not surprisingly, we found that the longer children were enrolled in Medicaid during a particular year, the greater the likelihood that they received any dental care, as well as dental services in all three specific categories that we studied. This finding was consistent across all four States and indicates that continuity of enrollment is a major factor in assuring that dental care is delivered to Medicaid enrolled children. Among users, longer duration of enrollment increased the number of dental services received, in general, in all States. In specific categories of service, there was an increase in intensity of service use in all States for diagnostic services, and in all States except California for preventive services. Only in Georgia did longer enrollment in Medicaid increase the number of therapeutic services received; in Tennessee the longer children were enrolled in Medicaid the fewer therapeutic services they received. With respect to therapeutic services, however, a lower probability of use and receipt of fewer services might be evidence of better oral health among children as a result of more widespread use of preventive services.

Children for whom we had data in both years did not have a higher probability of use of dental services in all States. For dental services, in general, we found that in three of the four States--California, Michigan, and Tennessee--enrollment in both years increased the likelihood of use of dental services and diagnostic services. For preventive dental services, we found this effect of enrollment in both years only in

Michigan and Tennessee; for therapeutic services enrollment in 1992 as well as in 1989 was related to an increase in the probability of service use in California and in Michigan.

d. Demographics and Metropolitan Residential Status

Young children aged three to six years old were significantly less likely to have any use of dental care than adolescent children, whereas children aged seven to 12 years had a higher probability of service use. This pattern was consistent for diagnostic services in all States, as well. For preventive and therapeutic dental services, we found a similar pattern except in California where children aged seven to 12 years were less likely to have used any preventive services than adolescents.

We found evidence that among Medicaid enrolled children, race and ethnicity were significant factors in explaining variation in the probability of service use. Black children were significantly less likely than white children to have any dental care and to have used diagnostic, preventive, or therapeutic services. In Tennessee, however, we found one exception--for preventive dental care, black children had a higher probability of service use than white children. In California and Michigan, Hispanic children were significantly less likely than non-Hispanics to receive any type of dental service.

The pattern of statistically significant results with respect to metropolitan residential status varied according to State. In California and Tennessee (where statistically significant), urban and suburban residence, compared with rural, increased the likelihood of receiving dental services. In Georgia and Michigan, compared to their rural counterparts, children living in urban and suburban areas were significantly less likely to receive dental care, in general.

3. Number of Dental Services Among Users -- Pooled Linear Models

Tables VII-5 through VII-8 summarize the results of the pooled linear regression models examining the number of dental services received among users. (See Appendix T for the accompanying detailed pooled linear regression tables.)

a. Direct Measures of Change Over Time and Provider Supply

In 1992 compared to 1989, the number of services among users increased in California and Michigan for dental services in general and diagnostic services. For preventive services, intensity of use increased among users in Tennessee and Michigan. Service use decreased in Tennessee for diagnostic and therapeutic services.

TABLE VII-5

LINEAR REGRESSION SUMMARY: NUMBER OF DENTAL SERVICES, CHILDREN OVER 3 YEARS OF AGE

POOLED MODEL INCLUDING INTERACTION TERM AND DUMMY VARIABLE FOR YEAR

Dependent Variable: TOT_CLM				
Regressor *(X)*	California	Georgia	Michigan	Tennessee
Intercept	+	+	+	+
Age 3-6 Year)	+	-	-	-
Age 7-12 Years	-		+	+
Black Race	-	-	-	+
Other Race	+			
Unknown Race	+		-	
Hispanic Ethnicit)	-			-
Female				
Urban Residence	+			+
Suburban Residence	+		-	+
Blind/Disabled	-	-	-	-
Foster Care	-		NA	-
Poverty-Related	+			
Medically Needy	+		+	
Months Enrolled in Medicaid	+	+	+	+
Months Enrolled in a PCCM Program	NA	NA		-
Well Child Visit	+			-
Children with data in both 1989 and 1992	-	-		-
Participating Dentists to Medicaid Child Enrollees	-		-	
Dental Clinic in County	NA	NA	-	
1992 Year Dummy	+		+	
1992*Dentists/Enrollees	-			-

Plus (+) and minus (-) signs indicate statistically significant coefficients where $p < .05$ or better. Blanks indicate coefficients that are not statistically significant

N/A indicates that the variable was not available.

Excluded categories: Ages 13 - 20 years, White, Male, Rural, AFDC/Foster Care, and 1989.

TABLE VII-6

LINEAR REGRESSION SUMMARY: NUMBER OF DIAGNOSTIC DENTAL SERVICES, CHILDREN OVER 3 YEARS OF AGE

POOLED MODEL INCLUDING INTERACTION TERM AND DUMMY VARIABLE FOR YEAR

Dependent Variable: DIAG_N				
Regressor *(X)*	California	Georgia	Michigan	Tennessee
Intercept	+	+	+	+
Age 3-6 Year)	+	-	-	-
Age 7-12 Years	+	+	+	-
Black Race	+		-	+
Other Race	+			
Unknown Race	+			
Hispanic Ethnicit)	-			
Female				
Urban Residence	+	+	+	+
Suburban Residence	+	+	-	+
Blind/Disabled	-	-	-	-
Foster Care	+		NA	-
Poverty-Related		-	-	-
Medically Needy			+	
Months Enrolled in Medicaid	+	+	+	+
Months Enrolled in a PCCM Program	NA	NA	+	-
Well Child Visit	+			-
Children with data in both 1989 and 1992	-			
Participating Dentists to Medicaid Child Enrollees	-		-	
Dental Clinic in County	NA	NA	-	
1992 Year Dummy	+	+		-
1992*Dentists/Enrollees	-			

Plus (+) and minus (-) signs indicate statistically significant coefficients where p < .05 or better. Blanks indicate coefficients that are not statistically significant

N/A indicates that the variable was not available.

Excluded categories: Ages 13 - 20 years, White, Male, Rural, AFDC/Foster Care, and 1989.

TABLE VII-7

LINEAR REGRESSION SUMMARY: NUMBER OF PREVENTIVE DENTAL SERVICES, CHILDREN OVER 3 YEARS OF AGE

POOLED MODEL INCLUDING INTERACTION TERM AND DUMMY VARIABLE FOR YEAR

Dependent Variable: PREV_N				
Regressor *(X)*	California	Georgia	Michigan	Tennessee
Intercept	+	+	+	+
Age 3-6 Year)	+	+	-	
Age 7-12 Years	+	+	+	+
Black Race	-	-	-	+
Other Race			-	
Unknown Race		-		
Hispanic Ethnicit)			+	
Female	-	-		
Urban Residence			-	+
Suburban Residence			-	+
Blind/Disabled			-	
Foster Care		+	NA	-
Poverty-Related				-
Medically Needy		+		-
Months Enrolled in Medicaid		+	+	+
Months Enrolled in a PCCM Program	NA	NA		
Well Child Visit				
Children with data in both 1989 and 1992				+
Participating Dentists to Medicaid Child Enrollees	-			+
Dental Clinic in County	NA	NA		
1992 Year Dummy			+	+
1992*Dentists/Enrollees				-

Plus (+) and minus (-) signs indicate statistically significant coefficients where p < .05 or better. Blanks indicate coefficients that are not statistically significant

N/A indicates that the variable was not available.

Excluded categories: Ages 13 - 20 years, White, Male, Rural, AFDC/Foster Care, and 1989.

TABLE VII-8

LINEAR REGRESSION SUMMARY: NUMBER OF THERAPEUTIC DENTAL SERVICES, CHILDREN OVER 3 YEARS OF AGE

POOLED MODEL INCLUDING INTERACTION TERM AND DUMMY VARIABLE FOR YEAR

Dependent Variable: THER_N				
Regressor *(X)*	**California**	**Georgia**	**Michigan**	**Tennessee**
Intercept	+	+	+	+
Age 3-6 Year)	+	+	+	+
Age 7-12 Years	-	-	-	-
Black Race	-		-	-
Other Race	+	+	+	+
Unknown Race	+			
Hispanic Ethnicit)			-	-
Female				
Urban Residence	+			
Suburban Residence				+
Blind/Disabled				
Foster Care	-		NA	
Poverty-Related	+		+	+
Medically Needy	+		+	+
Months Enrolled in Medicaid		+		-
Months Enrolled in a PCCM Program	NA	NA		
Well Child Visit	+			
Children with data in both 1989 and 1992	-	-	-	-
Participating Dentists to Medicaid Child Enrollees	-	-	-	-
Dental Clinic in County	NA	NA		
1992 Year Dummy	+			-
1992*Dentists/Enrollees	-			

Plus (+) and minus (-) signs indicate statistically significant coefficients where $p < .05$ or better. Blanks indicate coefficients that are not statistically significant

N/A indicates that the variable was not available.

Excluded categories: Ages 13 - 20 years, White, Male, Rural, AFDC/Foster Care, and 1989.

Increases in the ratio of participating providers to Medicaid child enrollees did not increase the number of services received among users. The increase in this ratio was associated with a decrease in the number of dental services received in California, diagnostic services in California and Michigan, preventive services in California, and therapeutic services in all four States. This effect was reinforced in California in 1992.

b. Medicaid Programmatic and Provider Supply/Access Measures

Having a preventive care visit was not always related to an increase in the number of dental services received among users of dental care. Only in California did a preventive medical care visit increase the number of dental services received; however, we did not find this effect of preventive medical visits on the number of preventive dental services children received. While we found statistically significant evidence of the impact of preventive medical care visits on intensity of dental service use in Georgia or Michigan, we found some evidence (any dental service and diagnostic dental services) indicating that this type of health care service was related to fewer dental services received among Medicaid enrolled children in Tennessee.

According to the results associated with the other programmatic variables that we included in our analyses, service use did not increase with either more involvement in a case management program or with greater access to services via an institutional provider.

c. Medicaid Eligibility and Enrollment Characteristics

Among users, children in the blind/disabled eligibility group used fewer services than those in the AFDC eligibility group. Among the specific categories of service, the patterns associated with differences in eligibility categories were not as pronounced in results from the equations modeling use among those who had received at least one service. For preventive dental services, children in the blind/disabled and poverty-related eligibility categories received fewer services than those in the AFDC category. Evidence for children in the foster care and medically needy categories was mixed, although in most cases children in the medically needy category received more services than those in the AFDC category.

When statistically significant, the impact of enrollment in both study years was related to fewer services being received, among users--except in the case of preventive dental service use in Tennessee.

d. Demographics and Metropolitan Residential Status

While there were some exceptions (all services in Tennessee, diagnostic services in California and Tennessee, and preventive services in Tennessee), among children who had received at least one service, black children received fewer services than white children. Among users of dental services, while Hispanic

children received fewer services overall and fewer diagnostic services in California as well as fewer therapeutic services in Michigan and Tennessee, we found Hispanic ethnicity to be positively related to the number of preventive dental services received in Michigan.

VIII. TOTAL MEDICAID EXPENDITURES

In this section, we present our findings on total Medicaid expenditures for children's health care services. Again, we first present descriptive analyses of total annual expenditures for users of any health care services and users of any inpatient services (see detailed tables in Appendix U). We then present the results of our multivariate analyses of total Medicaid expenditures. We used a four-equation model similar to that developed by Duan et al. (1983). In this model specification, we first estimate the probability of receipt of any health services and the probability of an inpatient stay among users of health care.[23] These two equations are estimated using logistic regression. The third and fourth equations of the four-part model use ordinary least squares regression to estimate total annual expenditures for users of outpatient services only and total annual expenditures for users of any inpatient services, with the log of total expenditures as the dependent variables. Detailed tables with these estimation results are included in Appendices V and W.

We chose to focus on changes over time; consequently, we have again specified and estimated pooled models with dummy variables for 1992 and an interaction term to assess changes in provider supply over time. Our objective was to assess whether expenditures differed over time, in general, and whether changes over time in the supply of providers with respect to the Medicaid enrolled child population affected the probability of receiving any care or any inpatient care and, among users of health care, total annual expenditures.

As in the previous sections, our results are organized according to four major classes of explanatory variables: (1) direct measures of change over time and provider supply, (2) other Medicaid programmatic and provider supply/access measures, (3) Medicaid eligibility and enrollment characteristics, and (4) demographics and metropolitan residential status.

A. Descriptive Analyses of Total Expenditures

In the descriptive analyses conducted for this project, we compared 1989 and 1992 annual per-child Medicaid expenditures for each of the four States. We adjusted 1989 expenditures using the Consumer Price Index for medical care to reflect 1992 dollars. The descriptive tables (see Appendix U) discussed in this section show mean expenditures for children who used any Medicaid-reimbursed service and mean expenditures for children who used any Medicaid-reimbursed *inpatient* services. Mean expenditures are

---

[23] In both Chapters VI and VIII, we present multivariate results for factors affecting the probability of having an inpatient stay. Although there is overlap in the explanatory measures used in both sets of models, the population of children analyzed is slightly different. In Chapter VI, our analysis is based on *all* child *enrollees* between 1 and 12 years of age. In Chapter VIII, our analysis is based on child *recipients* between 1-12 years of age, *conditional on any use of health care*. Thus, the results of these two sets of models vary slightly.

broken out by the same child characteristics presented in other sections of this report: age, race, and Medicaid eligibility category.

1. Users of Any Services

In 1989, annual average expenditures for children with any Medicaid-reimbursed services ranged from a low of $935 (Michigan) to a high of $1,286 (Georgia). Likewise, in 1992, average annual expenditures ranged from $888 (California) to $1,236 (Georgia).

As expected, children under one year of age and adolescents had higher expenditures, on average, than other children. This pattern was repeated across all study States and for both years. In Georgia and Tennessee, white children had significantly higher average expenditures than non-white children (excluding children of unknown race). However, in California and Michigan, this pattern was not observed.

Examining expenditures by Medicaid eligibility category showed some expected differences. Across all States with the exception of Tennessee in 1992, disabled children experienced higher average annual expenditures than other eligibility groups. Children in foster care also had relatively high average expenditures in comparison to other eligibility groups. As we would expect, children eligible for Medicaid because their families were receiving AFDC cash assistance experienced the lowest average expenditures of all eligibility groups. Interestingly, and perhaps contrary to what we would expect, children in the poverty-related Medicaid expansion category tended to have higher average expenditures than the medically needy group. Poverty-related children may be initiating enrollment in Medicaid at a time of illness which exceeds the usual level of medical need within the medically need/other group.

Michigan experienced the greatest overall increase in average annual expenditures; however, this State's average annual expenditure figure in 1989 had been the lowest of all four States. By 1992, average expenditures in Michigan were comparable to levels in the other three study States. Tennessee also experienced an increase in annual expenditures among users of any services between 1989 and 1992. California and Georgia had decreases in average annual expenditures for users of any services of 10 and 4 percent, respectively.

2. Users of Any Inpatient Services

In 1989, annual average expenditures for all children receiving inpatient care use ranged from a low of $3,581 (Michigan) to a high of $6,866 (California). In 1992, average annual expenditures were also lowest in Michigan ($3,912) but highest in Georgia ($5,798).

Unlike the patterns observed in the overall average annual expenditures for users of any health services, among users of any inpatient services, children under one year of age and adolescents generally

had lower average expenditures than other children. This difference is probably due to excluding children who received mostly well-child care. Differences in expenditures between black and white children with any service use were much smaller when we focus on the group of children who had inpatient service use.

Subsetting the group of children who had any inpatient service use showed dramatically higher average annual expenditures for disabled children, as we would expect. Per child expenditures for children in the foster care category were also relatively high in comparison to other eligibility groups. Among users of inpatient services, average annual expenditures for children in the poverty related group were the lowest among the eligibility categories.

For users of any inpatient services, Tennessee experienced the greatest overall increase in average annual expenditures (10%) while California experienced a 22 percent decrease. Average annual expenditures also increased in Michigan (9%) but decreased slightly in Georgia (3%).

B. Total Medicaid Expenditures -- Multivariate Analyses

In our examination of total Medicaid expenditures, we restricted our multivariate analysis to children aged three to 12 years of age. We excluded infants and adolescents from our analyses because of the high probability of the inclusion of delivery or pregnancy related expenditures for children in these age groups; our intent was to capture only illness-related expenditures. We also excluded from our analyses of total annual expenditures children who had claims for prescription drugs but no other use of health services.

1. Highlights of the Pooled Multivariate Results for the Probability of Using Services

We found a number of consistent patterns across states--particularly for demographic and Medicaid eligibility and enrollment characteristics. Across the four States, we found consistent patterns in change over time only for the likelihood of any inpatient use.

With respect to direct measures of change over time and provider supply:

- In California, in 1992 compared with 1989, there was a decrease in the likelihood of receiving any health services. In Tennessee, we found an increase in the probability of any use of health care over time.
- For any use of inpatient services, we found consistent evidence of a decrease in the probability of an inpatient stay in 1992 compared with 1989.
- In 1992, compared with 1989, the positive effect of increases in the supply of participating primary providers with respect to the number of Medicaid child enrollees on the likelihood of any health care use was enhanced, but only in California. For any inpatient care use, however, this effect was less in 1992 compared with 1989.

With respect to other Medicaid programmatic and provider supply/access measures:

- In Michigan, the longer children were enrolled in a case management program, the more likely they were to have received any health care services and the less likely they were to have been users of inpatient care.

- In California and Georgia, increases in the concentration of participating clinics increased the probability of use of any health care.

With respect to Medicaid eligibility and enrollment characteristics

- Children in the AFDC eligibility group were generally less likely to have been users of health care. In California and Tennessee, however, children in the medically needy group (California) and the blind/disabled group (Tennessee) were less likely to have used any health care. Children in the AFDC group were also less likely to have had an inpatient stay.

- The longer children were enrolled in Medicaid during the year, the more likely they were to have received any health services and to have received any inpatient care.

- In all four States, children enrolled in both 1989 and in 1992 were more likely to have received any health care services, but less likely to have received inpatient care in California.

With respect to demographics and metropolitan residential status:

- For both any health care use and any inpatient use, younger children were more likely to have been users than children aged seven to 12 years, in all four States.

- Black children were less likely than white children to have used any health care. In California, they were more likely to have used inpatient care; however, in Georgia they were less likely to have had an inpatient stay.

- Compared with rural residence, urban residence decreased the probability of use of any health care in Georgia, Michigan, and Tennessee. Suburban residence increased the probability of any health service use in California but decreased the probability of use in Georgia and Michigan compared to residence in a rural area. For the probability of inpatient stays, compared with rural residence, the findings for suburban and urban residence varied among the States.

2. The Probability of Receiving Health Care Services -- Pooled Logistic Models

In Tables VIII-1 and VIII-2, we present the results of the pooled analyses of the probability receiving any health care and any inpatient care; detailed tables with parameter estimates are included in Appendix V.

TABLE VIII-1

LOGISTIC REGRESSION RESULTS: PROBABILITY OF RECEIVING ANY HEALTH SERVICES, CHILDREN 1 TO 12 YEARS OF AGE

POOLED MODEL INCLUDING INTERACTION TERM AND DUMMY VARIABLE FOR YEAR

Dependent Variable: PROBABILITY OF RECEIVING ANY HEALTH SERVICES				
Regressor *(X)*	California	Georgia	Michigan	Tennessee
Intercept	-	-	-	-
Age 1-2 years	+	+	+	+
Age 3-6 years	+	+	+	+
Black Race	-	-	-	-
Other Race	+		-	-
Unknown Race	-		-	
Hispanic Ethnicity	-	-	+	+
Female				+
Urban Residence		-	-	-
Suburban Residence	+	-	-	
Blind/Disabled	+	+		-
Foster Care	+	+	NA	
Poverty-Related	+	+	+	
Medically Needy	-	+	+	+
Months Enrolled in Medicaid	+	+	+	+
Months Enrolled in a PCCM Program	NA	NA	+	
Well Child Visit	NA	NA	NA	NA
Children with data in both 1989 and 1992	+	+	+	+
Shortage Area		-		
Participating Clinics per 1,000 Population	+	+		
Participating Primary Care Providers/Child Medicaid Enrollees	+	-	+	+
1992 Year Dummy	-			+
Interaction Term of 1992 Year Dummy with INV_P02A	+			

Plus (+) and minus (-) signs indicate statistically significant coefficients where p < .05. Blanks indicate coefficients that are not statistically significant.

N/A indicates that the variable was not available.

Excluded categories: Ages 7 - 12 years, White, Male, Rural, AFDC (AFDC/Foster Care in Michigan), and 1989.

TABLE VIII-2

LOGISTIC REGRESSION RESULTS: PROBABILITY OF AN INPATIENT STAY CONDITIONAL ON USE, CHILDREN 1 TO 12 YEARS OF AGE

POOLED MODEL INCLUDING INTERACTION TERM AND DUMMY VARIABLE FOR YEAR

Dependent Variable: PROBABILITY OF AN INPATIENT STAY CONDITIONAL ON USE				
Regressor *(X)*	California	Georgia	Michigan	Tennessee
Intercept	-	-	-	-
Age 1-2 years	+	+	+	+
Age 3-6 years	+	+	+	+
Black Race	+	-		-
Other Race	-			-
Unknown Race	+	+		+
Hispanic Ethnicity	+			
Female	-	-	-	-
Urban Residence		-	+	-
Suburban Residence		-	+	
Blind/Disabled	+	+	+	+
Foster Care	+		NA	
Poverty-Related	+	+		
Medically Needy	+	+	+	+
Months Enrolled in Medicaid		+	+	+
Months Enrolled in a PCCM Program	NA	NA	-	
Well Child Visit	-			
Children with data in both 1989 and 1992	-			
Shortage Area	+			-
Participating Clinics per 1,000 Population	NA	NA	NA	NA
Participating Primary Care Providers/Child Medicaid Enrollees	+	-		
1992 Year Dummy	-	-	-	-
Interaction Term of 1992 Year Dummy with INV_P02A	-			

Plus (+) and minus (-) signs indicate statistically significant coefficients where $p < .05$. Blanks indicate coefficients that are not statistically significant.

N/A indicates that the variable was not available.

Excluded categories: Ages 7 - 12 years, White, Male, Rural, AFDC (AFDC/Foster Care in Michigan), and 1989.

a. Direct Measures of Change Over Time and Provider Supply

Over time, we found that children were less likely to have used any inpatient services in all four States. For use of any health services, we did not find any major trend. In California, in 1992 compared with 1989, there was a decrease in the likelihood of receiving any health services. In Tennessee, however, we found an increase in the probability of any use of health care over time. In Georgia and Michigan we found no statistically significant evidence suggesting that children were more or less likely to have used health care in 1992 compared with 1989.

Increases in the supply of participating primary care providers relative to the Medicaid enrolled child population were associated with an increase in the probability of use of health care in all States except Georgia. The positive coefficient for the interaction term representing the impact of increases in this ratio In 1992 compared with 1989 in California suggests that this positive effect was enhanced. We did not find additional evidence indicating that this measure of access to care affected the likelihood of using any services differently in 1992 compared with 1989. For any inpatient care, however, the impact of increasing the supply of primary care providers relative to the enrolled child population was not clear since it was associated with an increase in the likelihood of any inpatient use in California versus a decrease in Georgia. Our results indicate that the positive effect on use of inpatient care in California tapered off in 1992 compared with 1989.

b. Other Medicaid Programmatic and Provider Supply/Access Measures

Other Medicaid programmatic and provider supply or access measures that we included in the models that estimated the probability of service use included number of months enrolled in a PCCM program, the use of preventive care, the identification of a county as a primary care shortage area, and the number of clinics per 1,000 population. Our findings indicate that none of these measures had a consistent impact on the likelihood of use across the four States.

Case management had a positive and statistically significant effect on the likelihood of using any health care in only one of the two States (Michigan) where we had information on PCCM programs. In this State, however, the longer children were enrolled in a case management program, the less likely they were to have been users of inpatient care.

We included an indicator for receipt of at least one preventive medical care visit in the model for inpatient stays. Only in California did we find a statistically significant effect--preventive care visits were associated with a decreased probability of an inpatient stay.

In California and Georgia, increases in the concentration of participating clinics increased the probability of use of any health care. We found no statistically significant evidence that greater access to services through more clinics in a county had any impact on the receipt of care in the other two States. Children in shortage areas were less likely to have received any health care services in Georgia; the indicator for a shortage area yielded mixed evidence for the inpatient stay model with an increase in the probability of a stay in California and a decrease in Tennessee.

c. *Medicaid Eligibility and Enrollment Characteristics*

Children in the poverty-related eligibility category (California, Georgia, and Michigan), medically needy/other category (Georgia, Michigan, and Tennessee), and blind/disabled category (California and Georgia) were more likely than those in the AFDC group to have been users of health care. In California and Tennessee, however, children in the medically needy group (California) and the blind/disabled group (Tennessee) were less likely to have used any health care. Where statistically significant, children in all eligibility groups were more likely to have been inpatient users than those in the AFDC group.

Duration of enrollment was associated with use of any health care and any inpatient care. The longer children were enrolled in Medicaid during the year, the more likely they were to have received any health services and to have received any inpatient care. For use of any health care, but not for any inpatient use, this finding was reinforced by the increased likelihood of service use associated with enrollment in both 1989 and in 1992.

d. *Demographics and Metropolitan Residential Status*

Among all factors related to the probability of using both any health care and any inpatient care, results were most consistent across the four States for the demographic characteristics. As expected, we found that younger children were more likely to have used any health services as well as any inpatient services. There were racial differences in the likelihood of using health care. Black children were less likely than white children to have used any health care. For inpatient care, the findings were somewhat less consistent. In California, black children were more likely to have used inpatient care; however, in Georgia they were less likely to have had an inpatient stay.

Compared with rural residence, urban residence decreased the probability of use of any health care in Georgia, Michigan, and Tennessee. Suburban residence increased the probability of any health service use in California but decreased the probability of use in Georgia and Michigan compared to residence in a rural area. For the probability of inpatient stays, compared with rural residence, the findings for suburban and urban residence varied among the States.

3. Highlights of the Pooled Multivariate Results for Total Medicaid Expenditures

In this section, we present our results with respect to factors that affect total Medicaid expenditures. First, we highlight the major findings, then we describe the detailed results.

With respect to direct measures of change over time and provider supply:

- Total annual expenditures for children who used only outpatient services decreased in 1992 compared with 1989 in California and Georgia but increased in Tennessee. In California and Georgia, children who used inpatient services had lower expenditures in 1992 than in 1989.
- Expenditures for users of outpatient services only increased as a function of the increase in participating providers relative to child enrollees in California, Michigan, and Tennessee but decreased in Georgia. In Georgia and Tennessee, the effects on expenditures of changes in this ratio were mitigated in 1992.
- For users of inpatient services, increases in participating primary care provider supply relative to the child enrollee population increased total annual expenditures in Georgia and Michigan. This effect was reinforced in 1992 compared with 1989.

  With respect to other Medicaid programmatic and provider supply/access measures:

- Longer duration of enrollment in a case management program did not have a consistent effect on total expenditures for outpatient only users or users of any inpatient services.
- A preventive care visit during the year had no impact on total annual expenditures among users of any inpatient services.

With respect to Medicaid eligibility and enrollment characteristics

- For outpatient service only users, children in the AFDC eligibility category generally had lower expenditures than children in other eligibility categories, with the exception of children in the poverty-related eligibility group in Tennessee. Where statistically significant, we found similar results for inpatient services.
- Length of enrollment in Medicaid during the year was positively related to expenditures for users of outpatient services only and users of any inpatient services in all States, except in Georgia for inpatient service users where we found no statistically significant relationship.
- Children enrolled in both 1989 and in 1992 did not have consistently higher or lower expenditures than children enrolled in just one of the study years.

With respect to demographics and metropolitan residential status:

- In general, among users of outpatient services only, we found younger children had higher total annual expenditures. The only exception we found was in Tennessee among children aged three to six years old. Children aged one to two years old who had at least one inpatient stay had higher expenditures than children in the seven to 12 age group.
- Among users of outpatient services only, black children had lower total annual expenditures than white children.

4. Total Expenditures Among Users -- Pooled Linear Models

In Tables VIII-3 and VIII-4, we present the findings from the pooled analyses of total annual Medicaid expenditures for users of outpatient services only and users of any inpatient care; detailed tables with parameter estimates are included in Appendix W.

a. *Direct Measures of Change Over Time and Provider Supply*

Among the four States, we did not observe a consistent pattern in the impact of the direct measure of change over time on total annual expenditures for users of outpatient services only or for users of any inpatient services. In Georgia and California, among users of outpatient services, total annual expenditures decreased in 1992 compared with 1989. In Tennessee, however, we observed the opposite trend over time. In California and Georgia, children who used inpatient services had lower expenditures in 1992 than in 1989, but we did not find the coefficient on the dummy variable for 1992 to be statistically significant for Michigan and Tennessee.

Expenditures for users of outpatient services increased as a function of the increase in participating providers relative to child enrollees in California, Michigan, and Tennessee but decreased in Georgia. In Georgia and Tennessee, the effects on expenditures of changes in this ratio were mitigated in 1992. For users of inpatient services, increases in participating primary care supply relative to the child enrollee population increased total annual expenditures in Georgia and Michigan, and the effect on expenditures of this factor was greater in 1992 compared with 1989.

b. *Medicaid Programmatic and Provider Supply/Access Measures*

We did not find strong evidence for systematic effects of the other programmatic variables that we included in the models on total annual expenditures. Longer duration of enrollment in a case management program was associated with an increase in total annual expenditures for outpatient only users in Michigan versus a decrease in Tennessee. For users of any inpatient services in Tennessee, we also found that

TABLE VIII-3

LINEAR REGRESSION SUMMARY: TOTAL ANNUAL HEALTH CARE EXPENDITURES FOR OUTPATIENT ONLY USERS, CHILDREN 1 - 12 YEARS OF AGE

POOLED MODEL INCLUDING INTERACTION TERM AND DUMMY VARIABLE FOR YEAR - CALIFORNIA

Dependent Variable: TOTAL ANNUAL HEALTH CARE EXPENDITURES FOR OUTPATIENT ONLY USERS				
Regressor *(X)*	California	Georgia	Michigan	Tennessee
Intercept	+	+	+	+
Age 1-2 years	+	+	+	+
Age 3-6 years	+	+	+	-
Black Race	-	-	-	-
Other Race			-	-
Unknown Race	+			
Hispanic Ethnicity	-	-	+	
Female	-	-	-	-
Urban Residence		-	+	-
Suburban Residence				
Blind/Disabled	+	+	+	+
Foster Care	+	+	NA	+
Poverty-Related		+		-
Medically Needy	+	+	+	+
Months Enrolled in Medicaid	+	+	+	+
Months Enrolled in a PCCM Program	NA	NA	+	-
Well Child Visit	NA	NA	NA	NA
Children with services use in both 1989 and 1992		-	+	
Shortage Area	+			+
Participating Clinics per 1,000 Population	-	+		-
Participating Primary Care Providers/Child Medicaid Enrollees	+	-	+	+
1992 Year Dummy	-	-		+
Interaction Term of 1992 Year Dummy with INV_P02A		+		-

Plus (+) and minus (-) signs indicate statistically significant coefficients where $p < .05$. Blanks indicate coefficients that are not statistically significant.

N/A indicates that the variable was not available.

Excluded categories: Ages 7 - 12 years, White, Male, Rural, AFDC (AFDC/Foster Care in Michigan), and 1989.

TABLE VIII-4

LINEAR REGRESSION SUMMARY: TOTAL ANNUAL HEALTH CARE EXPENDITURES FOR USERS OF ANY INPATIENT SERVICES, CHILDREN 1 - 12 YEARS OF AGE

POOLED MODEL INCLUDING INTERACTION TERM AND DUMMY VARIABLE FOR YEAR - CALIFORNIA

Dependent Variable: TOTAL ANNUAL HEALTH CARE EXPENDITURES FOR USERS OF ANY INPATIENT SERVICES				
Regressor *(X)*	California	Georgia	Michigan	Tennessee
Intercept	+	+	+	+
Age 1-2 years	+	+		+
Age 3-6 years				
Black Race		-	+	
Other Race	+	+		
Unknown Race	+	+		+
Hispanic Ethnicity	-	-		
Female			-	
Urban Residence		+	+	+
Suburban Residence		+		
Blind/Disabled	+	+	+	+
Foster Care	+		NA	+
Poverty-Related				-
Medically Needy	+		+	
Months Enrolled in Medicaid	+		+	+
Months Enrolled in a PCCM Program	NA	NA		-
Well Child Visit				
Children with services use in both 1989 and 1992	-			
Shortage Area	+			
Participating Clinics per 1,000 Population	NA	NA	NA	NA
Participating Primary Care Providers/Child Medicaid Enrollees		+	+	
1992 Year Dummy	-		-	
Interaction Term of 1992 Year Dummy with INV_P02A		+	+	

Plus (+) and minus (-) signs indicate statistically significant coefficients where $p < .05$. Blanks indicate coefficients that are not statistically significant.

N/A indicates that the variable was not available.

Excluded categories: Ages 7 - 12 years, White, Male, Rural, AFDC (AFDC/Foster Care in Michigan), and 1989.

longer enrollment in a case management program was associated with a decrease in total annual expenditures. We did not find any evidence of a preventive care visit during the year increasing or decreasing total annual expenditures among users of any inpatient services.

Neither designation as a shortage area nor the ratio of participating clinics per 1,000 population had a clear impact on total annual expenditures. For outpatient only users, we found mixed results with respect to the ratio of clinics to population. In California and Tennessee, the designation of a county as a shortage area increased total annual expenditures. For users of inpatient services, the latter effect was found only in California.

c. *Medicaid Eligibility and Enrollment Characteristics*

AFDC children generally had lower expenditures than children in other eligibility categories. Where statistically significant, we found this pattern held among the eligibility categories for both users of outpatient services only and inpatient care. In general, the longer children were enrolled in Medicaid during the year, the higher their expenditures--whether or not they were users of only outpatient services or users of any inpatient services. Children enrolled in both 1989 and in 1992 did not have consistently higher or lower expenditures than children enrolled in just one of the study years.

d. *Demographics and Metropolitan Residential Status*

As we expected, we found younger children generally had higher total annual expenditures compared with older children. For inpatient service users, the pattern was slightly different. Children aged one to two years old who had at least one inpatient stay had higher expenditures than children in the seven to 12 years age group, but we did not find that children in the three to six year age group had significantly different total annual expenditures compared with the oldest children.

We found consistent evidence of racial differences in total annual expenditures for users of outpatient services. Among such users, black children had lower total annual expenditures than white children. For users of any inpatient services, we found contradictory evidence for the effect of black race on total annual expenditures in Georgia and Michigan.

IX. DISCUSSION AND CONCLUSIONS

This report provides a multivariate analysis of the extent to which preventive care as well as diagnostic and treatment services are provided to children under the Medicaid program. Specifically, our analysis examines the effects of the OBRA-89 legislation on preventive and illness-related care. In our multivariate models, we also examine the impact of a wide variety of additional factors on preventive and illness-related care, including other Medicaid programmatic and provider supply/access indicators, Medicaid eligibility and enrollment characteristics, as well as demographics and metropolitan residential status. In this section, we highlight some of the more important findings and discuss the implications for the delivery of both preventive care and illness-related services to Medicaid children.

A. Summary of Major Changes to Medicaid Under the OBRA-89 Legislation

OBRA-89 was one in a series of legislative initiatives enacted by Congress during the 1980s that radically changed both the types of individuals eligible for and services rendered under Medicaid. During this period, the Federal government chose to cover more poor and near-poor children, living in a variety of family circumstances, who were previously ineligible for Medicaid. OBRA-89, for example, required coverage of pregnant women and children up to age six years with incomes below 133 percent of the Federal poverty level.

OBRA-89 also made significant changes to the EPSDT program and modified regulations regarding the adequacy of payment rates for obstetrical and pediatric services. First, the law required the Secretary of Health and Human Services to set State-specific annual participation goals, such that by fiscal year 1995, all States were to achieve an EPSDT participation rate of 80 percent. To this end, States were expected to reduce the difference in annual participation rates and the 80 percent goal by one-fifth each year starting with fiscal year 1990.

To increase provider availability, this legislation also allowed qualified practitioners who provide less than the full set of screening, diagnosis and treatment services to participate in the EPSDT program. Likewise, States were required to set payment rates so as to ensure the availability of obstetrical and pediatric services for Medicaid recipients comparable to that of the general population within the same geographic area.

OBRA-89 contained a number of other mandates designed to enhance the delivery of preventive care to Medicaid children through EPSDT. It mandated distinct periodicity schedules for screening and other selected services; required coverage of interperiodic screening under EPSDT when a medical problem was suspected; defined EPSDT screening services to include a blood lead assessment; and imposed new reporting requirements. With respect to follow-up services, OBRA-89 required States to provide all Medicaid-

allowed treatment to correct problems identified during EPSDT screens, even if the treatment was not otherwise covered under the State's Medicaid Plan.

B. Implementation of OBRA-89 and Other Key Medicaid Program Features in the Study States[24]

To interpret many of the findings from our multivariate analysis, it is necessary to understand the State context in which they were observed. In this section, we briefly summarize major State Medicaid programmatic features relevant to our analysis, highlighting critical similarities and differences across the States along several dimensions, including the composition of the Medicaid child population in each State, benefit coverage policies for preventive and illness-related care, and provider fee schedules and participation requirements.

1. Composition of the Medicaid Child Population in Each Study State

The study States' pre-expansion Medicaid financial eligibility requirements for AFDC and medically needy qualification varied considerably. By in large, the Medicaid child population in the four study States was quite poor (at or well below the federal poverty level with respect to income) in both 1989 and 1992. During the study period, financial eligibility requirements as a percentage of the Federal poverty level or FPL increased very modestly in three States--Georgia, Michigan and Tennessee. In contrast, California experienced a decline in its AFDC and medically need income standards as a percent of the FPL.

The implementation of the optional poverty-related expansions also varied in timing and extent among the study States. During both 1989 and 1992, all four States required or permitted coverage of children through poverty-related eligibility provisions, although age restrictions and income cut-offs as a percentage of the FPL differed.

More importantly, the new poverty-related eligibility criteria changed the composition of the Medicaid child population in these States between 1989 and 1992. Medicaid children were younger on average: 47 to 53 percent of Medicaid children in the four States were under the age of seven in 1992 compared to 43 to 46 percent in 1989 (Herz, et al., 1996). In three of the study States, a higher percentage of Medicaid children were white in 1992 compared to 1989; California experienced a disproportionately small increase in the percentage of children classified as white during the study period. In addition, among the three States for

[24] Details regarding the Medicaid program in each Study State can be found in Chapter IV (Profiles of Study States) as well as Appendix D. This section is drawn from the synthesis report prepared for this project by Gavin et al (1996)

which we have complete data, we found a greater percentage of Medicaid children living in inner city counties of urban areas in 1992 compared to 1989.

Finally, a greater proportion of the child Medicaid population was disabled in 1992 compared to 1989. The number of SSI blind/disabled children rose 50 to 79 percent in the four study States. These increases were due at least in part to a Supreme Court decision in 1990 (Sullivan vs. Zebley, February 20, 1990) which required that a broader definition of disability based on age-appropriate functional standards be used in determining eligibility for SSI cash benefits, and thus, Medicaid. While SSI recipients only comprise 2 to 4 percent of the child Medicaid population, they account for a disproportionately large share of Medicaid expenditures due to their greater medical needs.

2. Key Benefit Coverage Policies for Preventive and Illness-Related Care

OBRA-89 was intended to expand the availability and receipt of preventive care among Medicaid-enrolled children through the EPSDT program. However, even before this legislation went into effect, in many States, Medicaid children received preventive care outside of EPSDT through the regular Medicaid program--often referred to as the "shadow" program.

All four study States had shadow programs to varying degrees. In 1989, a substantial shadow program existed in Michigan, where official EPSDT providers were restricted predominantly to public health departments. Children in California also had a considerable number of preventive care visits covered by Medicaid outside of EPSDT. While both Georgia and Tennessee disallowed payment for well-child visits outside of EPSDT, and thus had smaller shadow programs, only Georgia included edits in its claims processing system that excluded most payments for procedures and diagnoses that we identified as well-child visits.[25]

Only Michigan responded to the target EPSDT participation rate requirement set forth in OBRA-89 by officially recognizing its shadow program. In September 1990, Michigan opened the doors of its EPSDT program to all private physicians by instituting a two-tiered system. Under the new arrangements, screening visits provided by certified EPSDT providers (predominantly public health departments) were counted as "comprehensive" EPSDT screening visits while the routine well-child examinations provided by other mostly office-based Medicaid participating physicians were classified as "basic" EPSDT screening visits. As a result,

---

[25] Nevertheless, we were told by providers and Medicaid officials in Georgia that well-child check-ups were in fact provided and either were not billed to the State or were billed as diagnostic or treatment visits for a medical problem found during a screening procedure.

the percentage of all preventive care visits received outside of EPSDT was greatly reduced in Michigan by 1992.

States are mandated to provide a broad range of dental services to Medicaid eligible children under age 21 years to comply with EPSDT requirements. Basically, starting at three years of age (or earlier if medically necessary), children are expected to have a routine oral exam performed by a dentist at least annually. OBRA-89 specifies that dental services must include those for the relief of pain, infections, restoration of teeth, and maintenance of dental health. Thus, a wide range of preventive, diagnostic, therapeutic and emergency dental services must be made available to Medicaid enrolled children. Despite the breadth of the OBRA-89 requirements, across the States included in our analysis, there were variations in coverage of some types of dental services during the study period which could account for some of the State-specific findings detailed in this report.

To strengthen coverage of follow-up services for problems detected during EPSDT screens, OBRA-89 required States to provide all necessary diagnostic and treatment services for such identified problems regardless of their inclusion in State Medicaid Plans. In 1989, Michigan covered nearly every optional service for which Federal matching funds were available and California covered most optional services. Georgia and Tennessee covered fewer of these services. However, all four States had coverage limits on the amount, duration and scope of many mandatory and optional services in their Medicaid programs.

The site visits conducted for this project revealed little policy impact of the OBRA-89 provision that Medicaid cover any and all diagnostic or treatment services needed by children for conditions identified during an EPSDT screen (Hill and Zimmerman, 1995). In all four study States, Medicaid officials indicated that their program's coverage of services was very broad and that major changes to the depth and breadth of coverage of children's services were not needed. However, in response to OBRA-89, all four States instituted a medical necessity review process to determine, on a case-by-case basis, the need for services beyond those covered in the State Medicaid Plan to treat eligible children.

3. Provider Fee Schedules and Participation Requirements

One of the most critical aspects of the OBRA-89 legislation with respect to providers was the requirement that States set payment rates so as to ensure the availability of obstetrical and pediatric services for Medicaid recipients comparable to that of the general population within the same geographic area. In another study conducted as part of this project, we performed analyses relevant to understanding the success of this equal access provision in the four study States (Adams, et al., 1996b). When we compared Medicaid fees to fees for similar services paid to physicians for privately insured children within each State using the MEDSTAT MarketScan database, in all four study States, we found Medicaid fees were

significantly lower than private fees for both a set of representative children's services and a set of preventive care services.

The Medicaid fee generosity index for children's services overall improved slightly during the study period in both California and Tennessee (Adams et al., 1996b). On the other hand, this index declined somewhat in Georgia but remained constant in Michigan. Finally, Michigan was the only State in our study in which the fee index for preventive care services for children increased from 1989 to 1992; it declined somewhat in the other three States.

The study States also employed other strategies to increase provider participation in EPSDT subsequent to OBRA-89. For the most part, these strategies were designed to reduce administrative burden or to facilitate the billing process.

Fees for dental services increased significantly in both Michigan and California during the study period. In Michigan, fees rose 22 to 39 percent depending on the procedure while in California some dental fees more than doubled. Nevertheless, they remained quite low compared to private sector fees. In Georgia, there were a few small fee increases and, in Tennessee, there were no changes in dental fees from 1989 to 1992.

In addition to the State policies directly affecting providers, other aspects of OBRA-89 would indirectly affect provider participation by increasing demand for their services. For example, the eligibility expansions that dramatically increased enrollment during the study period, the provision requiring States to provide all Medicaid-allowed treatment to correct problems identified during EPSDT screens, the change in periodicity guidelines that called for additional services usually at younger ages, and efforts to increase children's EPSDT participation should all increase demand and hence provider participation.

C. Trends in the Provision of Preventive Care to Children

In this report, within a multivariate context, we describe the effects of a variety of factors on four types of preventive care for children. With respect to preventive care visits (EPSDT and non-EPSDT combined), EPSDT screening visits alone, and age-appropriate immunizations, according to periodicity guidelines, only children under three years of age were expected to receive these kinds of services during each analysis year. Therefore, these analyses focus on children under three years of age only. In contrast, for preventive dental services, the analyses include only children over the age of three years again based on periodicity guidelines.

From a policy perspective, the most critical explanatory variables in our regression models include two measures of change over time--a dummy variable for the analysis year and an interaction term for this

year dummy by the ratio of participating primary care providers (or dentists) to child Medicaid enrollees in the county of residence. These pooled models permit the direct examination of change over time in general and whether changes over time in primary care provider supply/access in particular affect the probability of receiving selected preventive care services or, among users, the total number of such services received.

In addition to these policy measures, three additional classes of explanatory variables were included in our regression models: (1) other Medicaid programmatic and provider supply/access measures, (2) Medicaid eligibility and enrollment characteristics, and (3) demographics and metropolitan residential status.

In this section, we summarize the major findings from our multivariate analyses of preventive services for children and discuss their implications for public policy.

1. Change Over Time in The Receipt of Selected Preventive Services

Overall, our regression models indicated that while improvements in the delivery of preventive medical services were evident in 1992 compared to 1989, utilization of preventive dental care demonstrated very little change.

With respect to well-child visits and immunizations, our descriptive findings (reported under separate cover) were somewhat mixed with regard to how successful States had been in providing children under three years of age with these services. Slight to moderate improvements were observed within each State between 1989 and 1992. Across States, the range in the actual percentages (adjusted for age, enrollment duration and periodicity guidelines) varied enormously. By 1992, in these States, 49 to 79 percent of the youngest children had a well-child visit--all of them were expected to have at least one such visit. In addition, 33 to 69 percent of scheduled visits for these children were provided in 1992. Likewise, 45 to 61 percent of recommended age-appropriate immunizations were obtained by 1992.

Our multivariate analysis confirmed that, in general, the study States achieved improvements in the delivery of preventive medical services to Medicaid children. Part of this success is likely attributable to the passage of OBRA-89 and the programmatic changes implemented by States in response to this and other legislation.

With respect to all well-child visits, EPSDT screening visits and age-appropriate immunizations, when all other factors are held constant, both the probability of any use and number of services received among users significantly increased between 1989 and 1992 in two of the four study States (Georgia and Michigan). Nearly identical results were observed in California. Results for Tennessee were less compelling and inconsistent.

Our descriptive findings with respect to preventive dental services (see Chapter VII) in general showed very low utilization across the four study States. Also, there was little to no improvement in the use of such services over time. By 1992, in California, only 4 percent of children with any dental care had received preventive dental services compared to 23 to 25 percent in Georgia, Michigan and Tennessee. Our multivariate findings indicated that in only one State (Tennessee) did both the probability of any use and the number of such services rendered increase significantly over the study period. Ironically, Tennessee was the only State in which there were no changes in dental fees from 1989 to 1992.

2. Effects of Change in Primary and Dental Provider Supply Over Time on the Receipt of Selected Preventive Services

We also examined the statistical significance of change over time in primary care provider (or dentist) supply and its effects on preventive medical and dental services.

With respect to all well-child visits, EPSDT screening visits and age-appropriate immunizations, in California only, the effect of increases in the ratio of participating primary care providers to child Medicaid enrollees in the county of residence on the probability of using these services was greater in 1992 versus 1989. In the remaining States, the findings were mixed.

With respect to preventive dental services, in three of four States, the effects of the ratio of dentists to child Medicaid enrollees in the county of residence on both the probability of any use and the number of such services received by users did <u>not</u> significantly change between 1989 and 1992. In Tennessee, results were statistically significant, but the negative coefficients suggest that the effect of increases in the ratio of dentists to child Medicaid enrollees in the county of residence on utilization of preventive dental services actually diminished or tapered off over time.

3. Effects of Other Factors on the Receipt of Selected Preventive Services

In addition to directly examining the impact of OBRA-89 on utilization patterns for preventive services, we also investigated the importance of several other factors in explaining these patterns of care. In this section, we highlight some of the more critical Medicaid programmatic features, eligibility characteristics, and demographics that influence receipt of preventive services.

a. *Other Factors Affecting Utilization of Well-Child Visits, EPSDT Screening Visits and Age-Appropriate Immunizations*

We expected that when provider supply/access increases, utilization of preventive medical care would also increase. In our multivariate models, to test these hypotheses, we included three county-level measures representing provider access/supply: (1) residence in a primary care shortage area, (2) ratio of

participating clinics per 1,000 population in the county of residence, and (3) ratio of participating primary care providers to child Medicaid enrollees in the county of residence. To be consistent with our hypotheses, within each State across all three measures the following pattern of results was expected--the shortage area measure would carry a negative coefficient and the two ratio measures would carry positive coefficients.

Overall, these measures did not provide a clear picture of the importance of provider supply/access in determining the use of preventive medical care. Only in California did one pattern of statistically significant results emerge that was consistent with our hypotheses. For all well-child visits, EPSDT screening visits alone and age-appropriate immunizations, the probability of any use was lower among children residing in primary care shortage areas compared to those who lived in non-shortage areas. Likewise, increases in both the ratio of participating clinics per 1,000 population and the ratio of primary care providers to child Medicaid enrollees were associated with an increased probability of using these preventive services. In the other three States, the pattern of findings was often not statistically significant or was inconsistent across measures.

Data on participation in PCCM programs were available only for Michigan and Tennessee. We hypothesized that such participation would improve use of preventive care visits, EPSDT screening visits and age-appropriate immunizations. However, our hypothesis was not supported. Results were typically not statistically significant, and in some cases, the reverse effect was observed.

We also examined the effects of Medicaid eligibility and demographic factors on utilization patterns. Controlling for key Medicaid programmatic characteristics and provider supply/access, several of these factors still had a consistent, statistically significant impact on receipt of preventive medical care across all four States. We highlight some of the more critical findings here.

Across all four States, compared to AFDC children under three years of age, blind/disabled children had a lower probability of receiving any well-child visits, EPSDT screening visits alone and age-appropriate immunizations. Results were less consistent for the number of such services received by users in each eligibility category, but when findings were statistically significant, blind/disabled users received fewer of these kinds of services than did their AFDC counterparts. These results are consistent with those obtained in our descriptive analysis (reported under separate cover) which indicated that, across all eligibility groups, blind/disabled children of all ages had some of the lowest preventive care participation and visit rates. Blind/disabled children enrolled in Medicaid typically use the health care system to obtain needed diagnostic and treatment services for their specific conditions and may be under continuing care for that purpose. However, it appears that with respect to their preventive medical care needs, among children under three years of age, the blind and disabled are being underserved relative to AFDC children.

In contrast, across all four States, compared to the AFDC group under three years of age, poverty-related children had a higher probability of receiving any well-child visits, EPSDT screening visits alone and

age-appropriate immunizations. Also, among users, the poverty-related group obtained more such services than did their AFDC counterparts in all four States. These multivariate findings are consistent with those obtained in our descriptive analysis (reported under separate cover) indicating that poverty-related children of all ages had some of the highest preventive care participation and visit rates. We speculate that this pattern of findings may reflect differences between the AFDC and poverty-related groups in terms of socio-economic status, and perhaps, health care seeking behavior as well.

What are the implications of these eligibility patterns for Medicaid managed care? Currently, many capitated managed care programs under Medicaid serve mainly AFDC populations. As these programs are expanded to include other eligibility groups, most notably the blind/disabled and poverty-related children, the effects on indicators of preventive medical care could change dramatically, depending on the mix of children in these eligibility groups within and across managed care plans. It will be important for on-going program monitoring and outreach purposes to target and track these eligibility groups separately with respect to preventive medical care.

Lastly, age was also important in determining receipt of preventive services. Across all four States, compared to toddlers, infants had a higher probability of receiving any well-child visits, EPSDT screening visits alone and age-appropriate immunizations. Also, among users, infants obtained more such services than did toddlers in all four States. These findings are consistent with periodicity guidelines in both 1989 and 1992 which recommended about twice as many preventive care visits for infants than for toddlers (e.g., six versus three, respectively), also providing increased opportunities for vaccination for the youngest age group. Mixed results were obtained in our descriptive analyses (reported under separate cover) with respect to which age category had more favorable utilization rates for visits and immunizations. Nonetheless, the data indicate the need for further improvements among all children under three years of age, emphasizing the continued importance of aggressive outreach and adequate provider reimbursement.

b. Other Factors Affecting Utilization of Preventive Dental Services

In this section, we highlight some of the more critical Medicaid programmatic, eligibility and demographic factors that also influenced the receipt of preventive dental services and discuss their implications for public policy.

In general, our regression models examining variations in preventive dental services rarely showed consistent patterns across all four States. When coefficients were statistically significant, these models revealed more consistent patterns with respect to the probability of any use than they did with respect to the number of services received by users.

Our indicators of provider supply/access (the ratio of dentists to child Medicaid enrollees and dental clinics in the county of residence) showed inconsistent patterns across States limiting generalizability. Likewise, relationships between participation in PCCM programs and use of preventive dental care were mixed in the two States for which data were available.

Our descriptive analyses (see Chapter VII) indicated that the relationship between receipt of preventive medical visits and preventive dental services was mixed across States. Again, among children with preventive medical visits, overall use of preventive dental services was low--one-fourth to one-third of children in three States received both types of preventive care (far less in California). However, according to our multivariate models, receipt of well-child visits significantly increased the probability of obtaining any preventive dental care in all four States. We speculate that when physicians see children for well-child visits, they sometimes make referrals for dental services, and in turn, some parents of Medicaid children follow up on those referrals. Nonetheless, given low overall utilization rates for preventive dental care, States should devise more aggressive strategies for outreach in general and for ensuring that physicians take every opportunity to make appropriate referrals to dentists.

Consistent variations in the probability of receiving any preventive dental services by eligibility group membership were evident in our regression models. Holding all other factors constant, in at least three States, both blind/disabled and poverty-related children were less likely than AFDC recipients to have any preventive dental care. The opposite trend was observed for foster care and medically needy/other children compared to the AFDC group.

With respect to age, children between seven to twelve years old in general were more likely than adolescents to obtain preventive dental care, but the youngest children (ages three to six years) had a lower probability of receiving any preventive dental services compared to teens. Finally, in three States, black children were less likely than white children to receive any preventive dental care. Also in three States, females had a higher probability than males of obtaining any preventive dental care.

Exactly why these eligibility, age, race and gender-specific groups had differential use of preventive dental services is not clear from our multivariate analyses. Ideally, such service utilization would be high and no group differences would exist. Thus, these findings suggest a need for targeted outreach efforts and careful monitoring for selected groups.

D. Trends in the Provision of Illness-Related Services to Children

In this report, within a multivariate context, we also describe the effects of a variety of factors on five types of illness-related services for children. The age groups included in each type of analysis varied. In our analyses of diagnostic and treatment visits as well as prescription drugs, all children under 21 years of age

were included. Only children between the ages of one and twelve years were included in our analysis of inpatient care since hospital claims for deliveries (affecting the infant and adolescent age groups) could not be easily identified and deleted. Finally, for both diagnostic and therapeutic dental services, our analysis focused on children over the age of three years since utilization of such services among younger children is extremely rare.

In this section, we summarize the major findings from our multivariate analyses of illness-related services for children and discuss their implications for public policy.

1. Change Over Time in The Receipt of Selected Illness-Related Services

Unlike the results pertaining to changes in the receipt of preventive medical care which were generally significant and positive, the pattern of results regarding change over time in the delivery of illness-related medical services was somewhat mixed. Often, no significant change occurred. When statistical significance was obtained, the coefficients were usually positive with one notable exception. The probability of having an inpatient stay among children ages one to twelve years significantly decreased between 1989 and 1992 across all four States. In general, these findings are consistent with State efforts to reduce utilization of costly services. Also, in the short-term, use of preventive services may increase illness-related health care utilization if medical problems that would have otherwise gone unattended are instead diagnosed and treated. The increase in the receipt of preventive services reported earlier may have lead to concomitant increases in some outpatient illness-related services within selected States.

In our descriptive analyses of diagnostic and therapeutic dental services, as with preventive dental services, utilization across States was quite low and there was little to no change over time. For example, the proportion of children with any dental care who also obtained any diagnostic dental services ranged from 18 to 28 percent in both years across States. Similar figures were even lower for therapeutic dental care, ranging from 11 to 14 percent across States and years. Our analyses do not indicate whether these low numbers are due to limited need or restricted access. However, coupled with low utilization of preventive dental care, these trends raise cause for concern.

Our multivariate findings were inconsistent with respect to change over time in the receipt of diagnostic and therapeutic dental services. As reported earlier, there was no significant change in the receipt of preventive dental services, except in Tennessee where decreases were evident by 1992. Similarly, changes in the receipt of diagnostic and therapeutic dental services over time were often non-significant, or when significant, coefficients were positive with one exception. Again, Tennessee showed decreases in the number of diagnostic and therapeutic services among users by 1992. Thus, OBRA-89 and other legislative initiatives enacted in the early 1990s appear to have had little impact on the receipt of preventive, diagnostic and therapeutic dental services.

2. Effects of Change in Primary Care and Dental Provider Supply Over Time on the Receipt of Selected Illness-Related Services

In the majority of models, the effects of the ratio of primary care providers (or dentists) to child Medicaid enrollees on both the probability of any use and the number of illness-related services among users did not significantly change between 1989 and 1992. That is, for the most part, no improvements or declines in service receipt due to variations in provider supply were evident. Some notable exceptions are discussed below.

Tennessee benefited from some improvements in provider access over time with respect to diagnostic and treatment visits. In contrast, in Georgia, the effect of decreases in the ratio of primary care providers to child Medicaid enrollees on diagnostic and treatment visits was greater in 1992 than 1989.

For dental services, only in Tennessee did consistent patterns emerge. Here, the effect of increases in the ratio of dentists to child Medicaid enrollees on utilization of diagnostic and therapeutic dental services diminished over time.

3. Effects of Other Factors on the Receipt of Selected Illness-Related Services

In addition to directly examining the impact of OBRA-89 on utilization patterns for illness-related services, we also investigated the importance of several other factors in explaining these patterns of care. In this section, we highlight some of the more critical Medicaid programmatic features, eligibility characteristics, and demographics that influence receipt of illness-related services.

a. *Other Factors Affecting Utilization of Diagnostic and Treatment Visits, Prescription Drugs and Inpatient Care*

For diagnostic and treatment visits, prescription drugs, and inpatient care, no consistent pattern of significant results emerged across our three provider supply/access measures within each State or across States. Rather than implying that provider supply/access is unimportant in explaining variations in utilization of illness-related medical services, we conclude that our measures may not be adequate indicators of provider supply/access with respect to illness-related care.

Data on PCCM participation was available only in Michigan and Tennessee. We had expected that such participation would increase utilization of preventive care, and thereby increase use of illness-related care at least in the short-term. Similar to the pattern of results observed with respect to preventive medical care, the effects of participation in PCCM programs on utilization of illness-related medical services were mixed.

One important factor related to the use of illness-related medical care is receipt of preventive medical services. We hypothesized that in the short-term, use of preventive medical services would increase health care utilization because identified medical problems that would have been left unattended are instead diagnosed and treated. In our descriptive analyses (reported under separate cover), we found that compared to non-users of well-child visits, a greater percentage of children who had at least one well-child visit received illness-related services, including diagnostic and treatment visits and prescription drugs. These patterns were consistent within age groups and held across all four States and both analysis years. Similarly, more children who had at least one well-child visit were hospitalized than children with no well-child visits. However, fewer inpatient days on average were observed for children with preventive medical care. Again, variations within age groups generally followed these trends.

Results from our multivariate analyses were consistent with our descriptive analysis findings. For all three measures of illness-related medical care, across all four States, children with well-child visits were significantly more likely to receive these services compared to children without well-child visits. In addition, a greater number of diagnostic and treatment visits and prescription drugs were obtained by users of well-child visits in all four States. Among hospitalized children, there was no significant difference between users and non-users of well-child visits in the number of inpatient days received in three of four States.

We also examined the effects of Medicaid eligibility and demographic factors on utilization patterns. Controlling for key Medicaid programmatic characteristics and provider supply/access, several of these factors still had a consistent, statistically significant impact on receipt of illness-related care across all four States. We highlight some of the more critical findings here.

Across all four States, compared to AFDC children, blind/disabled children generally had a higher probability of receiving any diagnostic and treatment visits as well as inpatient care. Results with respect to the probability of receiving prescription drugs were somewhat less consistent. However, blind/disabled users received more illness-related medical services than did their AFDC counterparts. These findings are not surprising given obvious differences in health status for these two eligibility groups.

Less consistent patterns of statistical significance were observed across States and illness-related services for the remaining eligibility categories. When statistical significance was obtained, compared to AFDC children, members of all other eligibility groups had a higher probability of having an inpatient stay. Among users of illness-related medical services, compared to the AFDC group, members of other eligibility groups often used more services.

Again, the implications for managed care under Medicaid are fairly straightforward. As these additional eligibility groups are covered under capitated programs, the volume of illness-related care may

increase. Without concomitant increases in capitation rates to accommodate the inclusion of these eligibility groups, incentives to underserve these children may prevail.

Age had a complex role in utilization of illness-related services. For diagnostic and treatment visits, children under three years of age were more likely than teenagers to receive services and used more such services. However, compared to adolescents, children in the middle age range (ages 3 to 12 years) were less likely to receive any diagnostic and treatment visits and, among users, obtained fewer such visits. For inpatient care, children under seven years of age were more likely than children ages seven to twelve to be hospitalized, and among users, usually received more inpatient days. Results with respect to prescription drug use were less consistent. In general, these findings indicate a need to closely monitor receipt of illness-related services within specific age groups to insure adequate access.

While race showed an inconsistent relationship to the receipt of preventive medical services, its association with utilization of outpatient illness-related care was clearer. For both diagnostic and treatment visits as well as prescription drugs, black children were less likely than whites to receive any services, and among users, obtained fewer such services across all four States. Differences in the receipt of inpatient care by race were inconsistent across States. As with age, these findings imply differential access to outpatient illness-related care for blacks versus whites, which may require close monitoring in some States.

b. Other Factors Affecting Utilization of Diagnostic and Therapeutic Dental Services

One of the most important findings in our analyses was that, overall there is very limited use of all types of dental care among children under Medicaid. For the most part, the other factors affecting utilization of preventive dental services had similar effects on utilization of diagnostic dental services and, to a somewhat lesser extent, on use of therapeutic dental care as well. Relationships between receipt of these dental services and programmatic characteristics such as provider supply/access as well as participation in PCCM programs were inconsistent across States. Use of well-child visits increased the probability of using preventive, diagnostic and therapeutic dental services suggesting that triaging by physicians to dentists is important. Finally, variations by selected eligibility and demographic characteristics again suggest that targeted outreach and on-going monitoring may be necessary to insure adequate service receipt.

E. Trends in Total Medicaid Expenditures for Children

For this project, we also investigated the impact of OBRA-89 and other factors on Medicaid payments. For this purpose, we used ordinary least squares regression to estimate total annual expenditures for users of outpatient services only and total annual expenditures for users of any inpatient services. (The detailed results of our complete analysis are provided in Chapter VIII).

We restricted our expenditure analyses to children ages three to twelve years. Infants and adolescents were excluded because of the presence of delivery or pregnancy-related expenditures for these children--our intent was to capture and analyze only illness-related costs.

In this section, we highlight the major factors affecting these expenditures and discuss the implications for public policy.

1. Change Over Time in Total Annual Expenditures

For the most part, we found either no changes or reductions in Medicaid payments during the study period. When all other factors are held constant, among users of outpatient services only, total annual expenditures, adjusted for inflation, were significantly lower in 1992 compared to 1989 in two States (California and Georgia). The opposite result was obtained for Tennessee, while Michigan experienced no significant change over time. With respect to users of any inpatient care, again, in two States (California and Michigan) total annual expenditures significantly decreased by 1992. For the remaining States (Georgia and Tennessee), there was no change over time. These findings are generally consistent with State efforts to contain costs through a variety of means during the past two decades.

2. Effects of Change in Primary Care Provider Supply Over Time on Total Annual Expenditures

In general, results with respect to the effects of the interaction term of the 1992 year dummy with the ratio of participating primary care providers to child Medicaid enrollees on total annual expenditures were mixed for both users of outpatient services only and users of any inpatient care. Findings were either non-significant, or when statistically significant, they were State-specific. Thus, no generalizations are possible with respect to accelerated or diminished effects over time of primary care provider supply/access on expenditures.

3. Effects of Other Factors on Total Annual Expenditures

As with the utilization analyses presented previously, we also examined the effects of other Medicaid programmatic and eligibility characteristics as well as demographics on total annual expenditures. We highlight some of the more critical factors here.

In three of four States (excluding Georgia), increases in the ratio of primary care providers to child Medicaid enrollees were associated with increased total annual expenditures for users of outpatient services only. A similar relationship was found for two States (Georgia and Michigan) with respect to total expenditures among users of any inpatient care. Other measures of provider supply (shortage area and participating clinics per 1,000 population) had inconsistent effects on total expenditures among both users of

outpatient services only and users of any inpatient care. Likewise, results with respect to participation in PCCM programs were also mixed.

Use of well-child visits had no impact on total expenditures among users of any inpatient care. Thus, while our utilization analyses generally showed that increases in the use of preventive care medical visits were often associated with increases in the receipt of a variety of other illness-related services, these effects were not translated into increased total annual expenditures, at least among users of any inpatient care.

Eligibility characteristics had a more consistent pattern of findings with respect to total annual expenditures for users of outpatient services only in comparison to users of any inpatient care. Among users of outpatient services, compared to AFDC children, blind/disabled, foster care and medically needy/other children had higher total annual expenditures. Among users of inpatient care, compared to AFDC children, only blind/disabled children had consistently higher total annual expenditures. These findings are undoubtedly influenced at least in part by differences in health status and service utilization across these groups.

Finally, with respect to demographics, several consistent trends in the data emerged. Younger children tended to have higher total annual expenditures than did older children. Among users of outpatient services only, blacks and females had lower expenditures compared to whites and males, respectively. While the relationship between metropolitan residential status and total expenditures was mixed among users of outpatient services, a clearer pattern was found among users of inpatient care. For such users, urban and suburban dwellers usually had higher total annual expenditures compared to children residing in rural areas--these variations may be driven at least in part by differences in reimbursement rates for some services by metropolitan status.

Finally, it should be noted that because of differences in State reimbursement policies, analyzing expenditures may be problematic. As a result, utilization analysis provides better insights into the nature and intensity of care provided to children under Medicaid.

X. REFERENCES

Adams, KE (April, 1992). *Effect of increased Medicaid fees on physician participation in Tennessee, 1985 - 1988.* Washington, DC: The MEDSTAT Group.

Bates, A, Fitzgerald, J, Dittus, R, and Wolinsky F (1994). Risk factors for underimmunization in poor urban infants. *Journal of the American Medical Association* 272(14):1105-1110.

Brown, LJ, Kingman, A, Brunelle JA, and Selwitz RH (1995). Most US School Children are Caries-Free in Their Permanent Teeth: This is No Myth. *Public Health Reports* 110(5):531-533.

Capilouto, E (1991). Access to appropriate dental care. *Current Opinions in Dentistry* 1(3):316-321.

Carey, T, Weis, K, and Homer, C (1990). Prepaid versus traditional Medicaid plans: Effects on preventive health care. *Journal of Clinical Epidemiology* 43(11):1213-1220.

Centers for Disease Control and Prevention (1994). Vaccination coverage of two-year-old children, United States, 1993. *Morbidity and Mortality Weekly Report* 43:705-709.

Centers for Disease Control and Prevention (1994a). Impact of missed opportunities to vaccinate preschool-aged children on vaccination coverage levels, selected U.S. sites, 1991-1992. *Morbidity and Mortality Weekly Report* 43:709-711, 717-718.

Cohen, J., and Cunningham, P (1995). Medicaid physician fee levels and children's access to care. *Health Affairs* (Spring):255-262.

Cunningham, P., and Hahn, B (1994). The changing American family: Implications for children's health insurance coverage and the use of ambulatory care services. *The Future of Children: Critical Health Issues for Children and Youth* 4(3):24-42.

Damiano, PC, Brown, ER, Johnston, JD, and Scheetz JP (1990). Factors affecting dentist participation in a state Medicaid program. *Journal of Dental Education*, Scholars' Papers 54(11).

Davidson SM, Manheim, LM, Werner, SM, et al. (1992). Prepayment with office-based physicians in publicly funded programs: Results from the Children's Medicaid Program. *Pediatrics* 89(4 pt 2):761-767.

Duan, N, W Manning, C Morris, and J Newhouse (1983). A Comparison of Alternative Models for the Demand for Medical Care. *Journal of Business and Economic Statistics* 2(1):115-126.

Edelstein BL, and Douglass, CW (1995). Dispelling the Myth that 50 Percent of US School Children Have Never Had A Cavity. *Public Health Reports* 110(5):522-530.

Fossett, JW, Perloff, JD, Kletke, PR, and Peterson, JA (1992). Medicaid and access to child health care in Chicago. *Journal of Health Politics, Policy and Law* 17(2):273-298.

Gamertsfelder, D, Zimmerman, R, and DeSensi, E (1994). Immunization barriers in a family practice residency clinic. *Journal of the American Board of Family Practitioners* 7:100-104.

Gavin, N (1992). *Review and Synthesis of the Literature on the Implementation and Effectiveness of Recent Legislative Initiatives Relating to Medicaid and EPSDT Coverage for Children*, Under HCFA Contract No. 500-92-066, Washington, DC: The MEDSTAT Group.

XI. APPENDICES

Appendix A: The EPSDT Program and Dental Care
Appendix B: Description of Data Sources
Appendix C: Methods for Distinguishing Partial From Full Screening Visits Under EPSDT
Appendix D: A Description of the Study States
Appendix E: Computation Methods for Participation and Completion Rates for Selected Well-Child Services
Appendix F: Probability of Receiving Well-Child Visits: Pooled Logistic Regression Models
Appendix G: Number of Well-Child Visits Among Users: Pooled Linear Regression Models
Appendix H: Probability of Receiving EPSDT Screening Visits: Pooled Logistic Regression Models
Appendix I: Number of EPSDT Screening Visits Among Users: Pooled Linear Regression Models
Appendix J: Probability of Receiving Age-Appropriate Immunizations: Pooled Logistic Regression Models
Appendix K: Number of Age-Appropriate Immunizations Among Users: Pooled Linear Regression Models
Appendix L: Probability of Receiving Diagnostic and Treatment Visits: Pooled Logistic Regression Models
Appendix M: Number of Diagnostic and Treatment Visits Among Users: Pooled Linear Regression Models
Appendix N: Probability of Receiving Prescription Drugs: Pooled Logistic Regression Models
Appendix O: Number of Prescription Drugs Among Users: Pooled Linear Regression Models
Appendix P: Probability of Receiving Inpatient Care: Pooled Logistic Regression Models
Appendix Q: Number of Inpatient Days Among Users: Pooled Linear Regression Models
Appendix R: Descriptive Tables for Dental Analysis
Appendix S: Probability of Receiving Various Dental Services: Pooled Logistic Regression Models
Appendix T: Number of Various Dental Services Among Users: Pooled Linear Regression Models
Appendix U: Descriptive Expenditure Tables
Appendix V: Probability of Receiving Health Care Services: Pooled Logistic Regression Models (Four-Part Model for Expenditures)
Appendix W: Total Expenditures Among Users: Pooled Linear Regression Models (Four-Part Model for Expenditures)

Gavin, N (March, 1996). *The impact of Medicaid on children's health service use: A ten-year retrospective analysis*, Under HCFA Contract No. 500-92-066, Research Triangle Park, NC: The Research Triangle Institute.

Gavin, N, and Bencio, D (1996). *The impact of Medicaid on children's health service use and expenditures: 1987 National Medical Expenditure Survey,* Under HCFA Contract No. 500-92-066, Research Triangle Park, NC: The Research Triangle Institute.

Hohlen, MM, Manheim, LM, Fleming, GV, et al. (1990). Access to office-based physicians under capitation reimbursement and Medicaid case management: Findings from the Children's Medicaid Program. *Medical Care* 28(1):59-68.

Hughat, N, Guyer, B, Stanton, B, et al. (1994). Do provider practices conform to the new pediatric immunization standards? *Archives of pediatrics and adolescent medicine* 148:930-935.

Hughes, D, Newacheck, P, Stoddard, J, and Halfon, N (1995). Medicaid managed care: Can it work for children? *Pediatrics* 95(4):591-594.

Hurley, RE, Freund, DA and Taylor, DE (1989). Emergency room use and primary care case management: Evidence from four Medicaid demonstration programs. *American Journal of Public Health* 79(7):843-846.

Jones, E, and Nickerson, JM (1986). A time series study of the effectiveness and costs of EPSDT outreach in Maine. *Public Health Reports* 101(1):68-76.

Lannon, C, Brack, V, Stuart, J, et al. (1995). What mothers say about why poor children fall behind on immunizations. *Archives of pediatrics and adolescent medicine* 149:1070-1075.

Lee PR, and Collins RJ (1995). Tooth Decay: Is it Still a Public Health Problem? *Public Health Reports* 110(5):521.

Lefkowitz, D., and Short, P (1989). Medicaid eligibility and the use of preventive services by low income children. Paper presented at the *Annual Meetings of the American Public Health Association*, Chicago, IL, October 23-27.

Lieu, TA, Black, SB, Ray, P, et al. (1994). Risk factors for delayed immunization among children in an HMO. *American Journal of Public Health* 84(10):1621-1625.

Lozano, P, Connell, F, and Koepsell, T (1995). Use of health services by African-American children with asthma on Medicaid. *Journal of the American Medical Association* 274(6):469-473.

Margolis, PA, Cook, RL, Earp, JA, et al. (1992). Factors associated with pediatricians' participation in Medicaid in North Carolina. *Journal of the American Medical Association* 267(14):1942-1946.

Moore, P, and Hepworth, J (1994). Use of perinatal and infant health services by Mexican-American Medicaid enrollees. *Journal of the American Medical Association* 272(4):297-304.

Oda, D, Heilbron, D, and Taylor H (1995). A preventive child health program: The effect of telephone and home visits by public health nurses. *American Journal of Public Health* 85(6):854-855.

Perloff, JD, Kletke, PR, and Neckerman, KM (1986). Recent trends in pediatrician participation in Medicaid. *Medical Care* 24(8):749-760.

Physician Payment Review Commission (1991). *Physician payment under Medicaid.* Report No. 91-4. Washington, DC.

Riportella-Muller, R., Selby-Harrington, M., Richardson, L., et al. (1996). Barriers to the use of preventive health care services for children. *Public Health Reports* 111(Jan/Feb):71-77.

Selby, ML, Riportella-Muller, R, Sorenson, JR, et al. (1992). Increasing participation by private physicians in the EPSDT program in rural North Carolina. *Public Health Reports* 107(5):561-568.

Selby-Harrington, ML, Sorenson, JR, Quade, D, et al. (1995). Increasing Medicaid child health screenings: The effectiveness of mailed pamphlets, phone calls and home visits. *American Journal of Public Health* 85(10):1412-1417.

US Congress, Office of Technology Assessment (October, 1990). *Children's Dental Services Under the Medicaid Program.* Washington, DC: US Government Printing Office.

US Department of Health and Human Services, Agency for Health Care Policy and Research (June, 1994). Low income children: The effect of expanding Medicaid on well-child visits. *Intramural Research Highlights, NMES: National Medical Expenditure Survey.* No. 38.

US Department of Health and Human Services, Office of Inspector General (April, 1996). *Children's Dental Services under Medicaid: Access and Utilization.* OEI-09-93-00240.

US Department of Health and Human Services, Public Health Service (September, 1990). *Healthy People 2000: National Health Promotion and Disease Prevention Objectives.* DHHS Publication No. (PHS) 91-50212. Washington, DC: US Government Printing Office.

US Department of Health and Human Services, Public Health Service, National Institute of Dental Research (September, 1989). *Oral Health of United States Children. The National Survey of Dental Caries in US School Children: 1986-1987, National and Regional Findings.* NIH Publication No. 89-2247. Bethesda, MD: National Institutes of Health.

Venezie, RD, and Vann WF (1993). Pediatric dentists' participation in the North Carolina Medicaid program. *Pediatric Dentistry* 15(3).

Vistnes, J., and Hamilton V (1995). The time and monetary costs of outpatient care for children. *AEA Papers and Proceedings: Incentives and the Demand for Health Services* 85(2):117-121.

Wade, M (July, 1992). *Medicaid fee levels and Medicaid enrollees' access to care.* Washington, DC: The Urban Institute.

Waldman, HB (1994). Updating the changing number and distribution of pediatric dentists. *Journal of Dentistry for Children* 61(January/February).

Waldman, HB (1990). Distributing dentists throughout the nation. *Annals of Dentistry* 11(2).

Weese, C, and Krauss, M (1995). A barrier-free health care system does not ensure adequate vaccination of two-year-old children. *Archives of pediatrics and adolescent medicine* 149:1130-1135.

Appendix A

The EPSDT Program and Dental Care

APPENDIX A

THE EPSDT PROGRAM AND DENTAL CARE

The legislation that established the EPSDT program was passed by Congress in 1967; however, dental guidelines for the EPSDT program were not developed until 1980.[1] As part of the EPSDT screen that constitutes the basic health assessment, the program requires that the screening provider refer children for a visit to a dentist, or dental professional under the supervision of a dentist, for a dental screening. Referrals and a subsequent visit to the dentist are required for Medicaid eligible children age three or at a younger age if medically necessary. The initial referral should be made without regard to a State's periodicity schedule while subsequent referrals and visits are to conform to the periodicity schedule. OBRA-89 specified that dental examinations should be provided more frequently than physical examinations for older children. OBRA-89 also amended the EPSDT legislation to require that States involve dental organizations with expertise in child health care in the development of periodicity schedules.

In addition to requiring dental screening, the EPSDT program mandates that States must provide dental services according to periodicity schedules and as medically necessary. Sec. 1905(r) of the Social Security Act, created by OBRA-89, details the basic requirements for the EPSDT program and specifies that dental services must include those for the "relief of pain, infections, restoration of teeth, and maintenance of dental health." These services, summarized in Appendix Table A-1 include diagnostic, preventive, therapeutic, and emergency services for dental disease (HCFA 1990).

These dental services must be provided even if they are not included in the State plan. Moreover, as with other problems detected during an EPSDT screen, any Medicaid-allowed dental services that are necessary to treat an oral health problem identified during a dental screening must also be provided.

Dental care is provided as an optional benefit for adult Medicaid recipients. However, States are required to provide dental services to Medicaid eligible children under age 21 to comply with EPSDT requirements. Allowed services under each State's program are detailed in each State's dental provider manual. Variation in children's utilization of dental services among States is most likely a function of differences in covered services and Medicaid eligibility in addition to differences in provider supply and

---

[1]These guidelines are outlined in: US Department of Health, Education, and Welfare, Health Care Financing Administration in cooperation with The American Society of Dentistry for Children and The American Academy of Pedodontics, *A Guide to Dental Care for the Early and Periodic Screening, Diagnosis, and Treatment Program (EPSDT) Under Medicaid*, February 1980.

Appendix Table A-1

Dental Services

Initial Visit and Diagnostic Services: A first dental visit, by at least age three is to include a patient history (medical history, dental history, and past fluoride exposure); clinical charting of existing conditions of the oral and facial structures; identification of anomalies, disease and other significant deviations for treatment and referral; formulation and presentation of an organized plan or approach to treatment; and radiographs.

Emergency Services: Those necessary to control bleeding, relieve pain, eliminate acute infection; operative procedures which are required to prevent pulpal death and the imminent loss of teeth; treatment of injuries to the teeth or supporting structures (e.g., bone or soft tissues contiguous to the teeth); and palliative therapy for periocoronitis associated with impacted teeth. Routine restorative procedures and root canal therapy are not emergency services.

Preventive Services: Instruction in self-care oral hygiene procedures; oral prophylaxis (cleaning of teeth), both necessary as a precursor to the application of dental caries preventives where indicated, or independent of the application of caries preventives for patients 10 years of age or older; and professional application of dental sealants when appropriate to prevent pit and fissure caries.

Therapeutic Services: Pulp therapy for permanent and primary teeth; restoration of carious (decayed) permanent and primary teeth with silver amalgam, silicate cement, plastic materials and stainless steel crowns; scaling and curettage; maintenance of space for posterior primary teeth lost permanently; provision of removable prosthesis when masticatory function is impaired, or when existing prosthesis is unserviceable; and orthodontic treatment when medically necessary to correct handicapping malocclusion.

Medicaid participation. In its 1990 evaluation of dental care provided by seven States, OTA identified a core set of "basic" dental services as a reference for comparison. OTA ultimately concluded that, to some extent, each of the seven State programs failed to adequately cover these basic services (US Congress 1990).

APPENDIX B

DESCRIPTION OF DATA SOURCES

I. Overview of Tape-to-Tape Files

The Tape-to-Tape database served as the primary data source for the study. This database includes all enrollment and claims data from the Medicaid Management Information Systems (MMIS) in four States -- California, Georgia, Michigan, and Tennessee -- for calendar years 1980 through 1992. In addition, the Tape-to-Tape data files include additional Medicaid enrollment and claims data in these States that are processed through automated systems which are not part of the regular MMIS. For instance, EPSDT services are processed in separate systems in two of the four study States (California and Michigan).

In a recently completed contract, The MEDSTAT Group captured the Tape-to-Tape data from the raw State data files and converted them into uniform files. MEDSTAT not only formatted the files identically, but also "mapped" most of the data from raw State codes to uniform (or consistent) codes. MEDSTAT then extensively edited and cleaned the Tape-to-Tape data by: (1) combining facility bills for hospital stays into a single record per stay; (2) combining adjustment records with original claims (to show final reimbursement for each service); and (3) screening dates, quantities, and code values for reasonableness. In addition, The MEDSTAT Group thoroughly described the data and carefully documented anomalies so that users can understand the constraints and peculiarities of the data.

The Tape-to-Tape database partitions Medicaid data on enrollment, claims and providers into nine separate files:

- enrollment data (one record per enrollee),
- inpatient claims (one record per stay),
- long-term care claims (one record per billing period),
- dental claims (one record per individual service),
- drug claims (one record per drug prescription filled),
- all other/outpatient claims (one record per individual service),
- provider data (one record per active provider),
- person summary data (one record per enrollee), and
- supplemental EPSDT health screening data (one record per individual service or screen).

We used four of these nine files to create the 1989 and 1992 child-level summary files for the study: (1) person summary data, (2) enrollment file data, (3) all other/outpatient claims and (4) dental claims. These four source files are described below.

A. Person Summary Files

The person summary files (also known as Early Returns files) summarize enrollment and claims information for each enrollee for each calendar year. For example, these files capture demographic information (e.g., birth date, sex, race, county of residence) and Medicaid enrollment characteristics (e.g., total months of enrollment, eligibility group, capitation status, Medicare crossover status). These files also provide data on total Medicaid payments and total units of service by specific category of service (e.g., physician visits, inpatient stays, expenditures for prescription drugs, etc.). Because the person summary files are relatively small, they are useful for identifying all users of a particular service (e.g., EPSDT screening services), as well as for describing aggregate utilization and expenditure levels.

B. Enrollment Files

The enrollment files, one for each State and calendar year, contain one record for each enrollee in the State's Medicaid program. Each record includes basic demographic data (e.g., birth date, date of death, sex, race, social security number, etc.) and 12 repeating segments, one for each month of the year. The repeating segments provide enrollment-related detail specific to each month (e.g., days of enrollment, eligibility group, spend-down amounts, capitation flag, etc.). These files are useful when detailed monthly data on enrollment characteristics are needed as opposed to annual, aggregate summaries as found in the person summary files.

C. All Other/Outpatient Claims Files

The detailed uniform outpatient claims files on Tape-to-Tape include data on most of the services rendered to ambulatory care patients, as well as professional services provided to hospitalized patients. Specifically, these files carry certain standard information identifying the recipient of the service (e.g., identification number, eligibility group, birth date, gender), the provider of the service (e.g., provider identification number, provider type), and the service provided (e.g., total charge, Medicaid payment, other third-party payment, category of service). Also included are variables that capture diagnosis, service/procedure code (detailed and uniform), and place of service. This file also contains EPSDT claims for screening visits, immunizations and laboratory claims.

Claims for EPSDT screening visits and for immunizations and other services provided at the time of screening or by an EPSDT provider are identified as EPSDT on the Tape-to-Tape files -- that is, they have a "category of service" designation of EPSDT. However, when a child has a well-child visit with a non-EPSDT provider or when a child receives treatment or referral services recommended after an EPSDT screen, the services appear as regular "outpatient" claims with other categories of service (e.g., physician, OPD, clinic) and with no means to identify them as EPSDT.

D. Dental Claims Files

The dental claims files contain all claims for dental services rendered by dentists or dental clinics. As with the all other/outpatient claims files, these dental files carry certain standard information identifying the recipient of the service (e.g., identification number, eligibility group, birth date, gender), the provider of the service (e.g., provider identification number, provider type), and the service provided (e.g., total charge, Medicaid payment, other third-party payment, category of service). Dental claims also include fields that capture treatment dates, uniform treatment codes, and detailed dental procedure codes. The dental files do not contain an indicator designating claims as EPSDT, primarily because in most States all dental services provided to Medicaid enrollees under age 21 years are considered to be EPSDT services.

Appendix B

Description of Data Sources

Appendix C

Methods for Distinguishing Partial
From Full Screening Visits Under EPSDT

APPENDIX C

METHODS FOR DISTINGUISHING PARTIAL FROM FULL SCREENING VISITS UNDER EPSDT

In the Tape-to-Tape database, there is no indicator on the uniform outpatient claims specifying whether the services rendered represent EPSDT full versus partial screening visits. Therefore, to distinguish full from partial screening visits under EPSDT, we classified uniform outpatient claims as EPSDT full screening visits if they had a category of service of EPSDT and a visit procedure code.

We divided all non-visit claims with an EPSDT category of service (e.g., uniform EPSDT claims for separately itemized immunizations, laboratory tests, developmental assessments, anticipatory guidance, hearing screens, and vision screens) into one of two groups. The first group contained all claims with the same recipient and provider ID numbers and overlapping dates of service with an EPSDT full screening visit claim. We classified these claims as components of a full screening visit. The second group of claims had no EPSDT full screening visit claim with the same recipient ID, provider ID and date of service. We classified these claims as EPSDT partial screening visits. Two or more EPSDT partial screening claims with the same date of service and the same provider ID number (e.g., one DTP, one urinalysis, and one hearing screen) were bundled into a single partial screening visit.

Appendix D

A Description of the Study States

APPENDIX D

A DESCRIPTION OF THE STUDY STATES

The study States differed in significant ways, both with regard to their Medicaid coverage for children and their EPSDT programs. In this section, we present a brief overview of each State's Medicaid program, followed by a review of key administrative and policy characteristics of their EPSDT operations. Since this report focuses on changes over time, we note important policy changes that occurred between 1989 and 1992 in the study States.[1] Finally, we describe variations in periodicity schedules for well-child visits and immunizations across the States and in comparison to the American Academy of Pediatrics guidelines.

I. California

In both 1989 and 1992, California had the largest State Medicaid program nationwide, measured in terms of total recipients, and was second only to New York with regard to expenditures. As shown in Appendix Table D-1, the total number of Medicaid recipients in California was 3.3 million in 1989, increasing to nearly 4.5 million in 1992, accounting for about 15 percent of all Medicaid recipients in the U.S. in both years. Expenditures for California's Medicaid program totaled $5.5 billion in 1989 and reached $8.7 billion in 1992, representing about 10 percent of Medicaid expenditures nationwide in both years. California's program was considerably larger than the programs of the three other study States combined. Excluding children in capitated plan arrangements, institutions, and children with both Medicare and MediCal coverage, approximately 2.1 million children (55 percent of all MediCal recipients) received Medicaid-covered services in 1989. By 1992, there were almost three million MediCal recipients under age 21, representing 56 percent of all recipients in California.

Appendix Table D-2 shows the 1989 and 1992 monthly income levels for Medicaid eligibility in the four Tape-to-Tape States used in this analysis. During the study period, California's income eligibility thresholds for Medicaid remained higher than those of the other study States. The AFDC need standard for a family of three in 1992 was $694 monthly or about 72 percent of the Federal Poverty level (FPL); however, the need standard expressed as a percent of the FPL was 12 percent less than it was in 1989. California's need standard is still quite high, second only to Vermont in the continental U.S. Its medically needy income level, ranking first in the continental U.S. in both years, remained at $934 monthly, or 97 percent of the FPL in 1992.

---

[1] This section of the report relies heavily on detailed case studies of each State's EPSDT program, undertaken as part of this project. These case studies are available under separate cover.

APPENDIX TABLE D-1

Total Medicaid Recipients and Expenditures U.S. Total and Study States, FY 1989 and FY 1992

FY1992						
	Total Medicaid Recipients*			Total Medicaid Expenditures (in billions)		
	Number	Percent	State Rank	Dollars	Percent	State Rank
U.S. Total	22,197,308	100.0	—	$54.5	100.0	—
California	3,325,968	15.0	1	5.5	10.1	2
Georgia	581,543	2.6	10	1.2	2.2	11
Michigan	1,117,196	5.0	5	2.0	3.7	8
Tennessee	542,595	2.4	11	0.9	1.7	18
Subtotal for Study States	5,567,302	25.1	—	9.6	17.6	--

FY 1992						
	Total Medicaid Recipients			Total Medicaid Expenditures (in billions)		
	Number	Percent	State Rank	Dollar s	Percent	State Rank
U.S. Total	30,926,390	100.0	—	$90.8	100.0	—
California	4,486,743	14.5	1	8.7	9.6	2
Georgia	863,670	2.8	9	2.1	2.3	13
Michigan	1,129,023	3.7	7	2.8	3.1	9
Tennessee	785,231	2.5	10	1.7	1.9	15
Subtotal for Study States	7,264,667	23.5	—	15.3	16.9	--

*Reliable numbers are not available for FY 1989 with regard to total number of enrollees nationwide and by State.

Source: HCFA, BDMS, OPS, Division of Medicaid Statistics.

APPENDIX TABLE D-2

Selected Monthly Income Levels for Medicaid Eligibility for Study States, 1989 and 1992 (Family of Three)

1989				
	AFDC Cash Assistance		Medically Needy	
	Need Standard	Need Standard as % of FPL*	Monthly Income Level	Income Level as a % of FPL*
California	$694	85	$934	113
Georgia	$414	50	$367	45
Michigan	$575	70	$555	67
Tennessee	$387	47	$250	30

1992				
	AFDC Cash Assistance		Medically Needy	
	Need Standard	Need Standard as % of FPL**	Monthly Income Level	Income Level as a % of FPL**
California	$694	72	$934	97
Georgia	$424	44	$375	39
Michigan	$587	61	$567	59
Tennessee	$426	44	$250	26

Sources:
(1) Gurny, Paul, David K. Baugh, and Feather Ann Davis. "Chapter 10: A Description of Medicaid Eligibility," in Health Care Financing Review, 1992 Annual Supplements, pp. 207-225.

(2) Characteristics of State Plans for AFDC, Office of Family Assistance, Department of Health and Human Services, 1990-1991 Edition.

(3) Medicaid Eligibility: Selected Program Characteristics, National Governors' Association, 1989.

*The 1989 Federal Poverty Level for a Family of Three was $824 per month.
** The 1992 Federal Poverty Level for a Family of Three was $964 per month.

As reported in Appendix Table D-3, California did not move as quickly as other States to exercise the Medicaid expansion options for children legislated in OBRA-87, primarily because its income thresholds for Medicaid were already near the poverty level. In the summer of 1989, California chose to extend Medicaid to pregnant women and infants with family incomes up to 185 percent of the FPL, but the State did not exercise the option to extend Medicaid to older children. In April of 1990, the State complied with the federal mandate to cover children up to age six who were living below 133 percent of the FPL, and all other children born after September 30, 1983 up to 100 percent of the poverty level.

California's EPSDT program, called the Child Health and Disability Prevention Program (CHDP), differs from other States in that it funds preventive services to both Medicaid and non-Medicaid eligible children. In 1989, CHDP coverage extended beyond Medicaid children to all children in the State under age 18 up to 200 percent of the FPL, as well as children in Head Start and State preschool programs. However, for purposes of this study, data for these non-Medicaid coverage groups have been excluded.

Local social service/welfare departments in California administer the AFDC and Medicaid only eligibility processes and, thus, are responsible for informing families with children about the basic benefits of the CHDP program. When families indicate an interest in receiving services or further information, workers notify the local CHDP program. Most counties in California have CHDP units in their local health departments. These units are responsible for a variety of functions related to day-to-day operations, including conducting outreach and education, tracking children to ensure receipt of services, recruiting and monitoring providers, and implementing State and federal regulations.

Public and private providers participate in the State's CHDP program. Although private physicians, mostly in group or solo practices, comprise approximately 80 percent of all CHDP providers, they are responsible for about half of all CHDP examinations. County health departments, schools, and community clinics are among the public sector providers that perform the other half of screening exams. During the study period, California's reimbursement rates for CHDP exams varied according to the age of the child, and whether the patient was new. Rates also varied according to whether the provider had the capacity to render a comprehensive set of services (including screening, diagnostic, and treatment); or was able to render only the required screening services.

During California's fiscal year, from July of 1991 through June of 1992, there were approximately 4,500 actively enrolled CHDP providers. Although physician participation in the CHDP program was reported to be widespread, some pediatricians and other providers who serve children could choose not to participate in the program. They could be reimbursed for well-child visits under the regular Medicaid program (although the reimbursement rate is lower than that used by CHDP).

APPENDIX TABLE D-3

Medicaid Coverage Expansions of Infants and Children From 1988 to 1992 in the Four Study States

Study State	Coverage of Infants		Coverage of Children		
	% of FPL	Effective Date	% of FPL	Ages Covered	Effective Date
California	185	Jul-89	133 100	up to age 6 all other children born after 9/30/83	Apr-90 Apr-90
Georgia	100 133	Jan-89 Apr-90	100 100 133 100	up to age 3 up to age 4 up to age 6 all other children born after 9/30/83	Oct-88 Oct-89 Apr-90 Mar-91
Michigan	185	Oct-88	100 100 133 100	up to age 2 up to age 3 up to age 6 all other children born after 9/30/83	Jan-88 Oct-88 Apr-90 Jul-91
Tennessee	100 150 185	Jul-87 Jan-90 Jul-91	100 100 133 100	up to age 5 up to age 7 up to age 6 all other children born after 9/30/83	Jul-88 Jan-90 Apr-90 Jul-91

Sources:

(1) Hill, Ian and Beth Zimmerman. Evaluation of EPSDT Programs in Tape-to-Tape Sates, Volume II: Case Study Reports. Washington, DC: Health Systems Research Inc. Project deliverable submitted to HCFA, ORD on January 6, 1995.

(2) Hill, Ian. 1992. The Medicaid Expansions for Pregnant Women and Children: A State Program Characteristics Database. Washington, DC: Health Systems Research, Inc.

II. Georgia

In 1992, Georgia had the ninth largest State Medicaid program nationwide, measured in total recipients, and the thirteenth largest with regard to expenditures. There were 863,670 Medicaid recipients in Georgia in fiscal year 1992, accounting for almost three percent of all Medicaid recipients (see Appendix Table D-1). Expenditures for Georgia's Medicaid program that year reached $2.1 billion -- 2.3 percent of Medicaid expenditures nationwide. Excluding children in capitated plan arrangements, institutions, and children with both Medicare and Medicaid coverage, Georgia had 358,838 Medicaid recipients under age 21 in 1989, or 57 percent of all Medicaid recipients. By 1992, this number had grown to 597,245 Medicaid recipients under age 21, representing 60 percent of all recipients. Of all the study States, Georgia had the highest proportion of Medicaid recipients under age 21.

The State's income eligibility thresholds for Medicaid, as shown in Appendix Table D-2, were much lower than those of California and Michigan, but higher than those used by Tennessee. Its AFDC need standard for a family of three in 1992 was $424 monthly, up from $414 monthly in 1989, representing 44 and 50 percent of the FPL, respectively. Its medically needy income level was $375 monthly in 1992, 39 percent of the FPL--six percentage points lower than in 1989.

At the beginning of 1989, to remedy low Medicaid income thresholds, Georgia exercised the OBRA-87 option to extend Medicaid to pregnant women, infants and children up to age three with family incomes up to 100 percent of the FPL (see Appendix Table D-3). In October of 1989, it raised its upper limit to children under age four for the 100 percent coverage. Although Georgia did not raise its level for pregnant women and infants to the full 185 percent of the FPL threshold allowed by Medicaid law, the move to the 100 percent level was a significant expansion beyond its other Medicaid income thresholds. In 1990, the State complied with the federal mandate to cover pregnant women and infants with family income of up to 133 percent of the FPL, but unlike the other study States, Georgia has not exercised the option to the maximum threshold of 185 percent. Also in compliance with federal mandate, in April of 1990, the State began covering children up to age six with family incomes under 133 percent of the FPL. By 1991, all children up to age eight with family incomes under 100 percent of the FPL were eligible for Medicaid.

Similar to the programs in the other study States of Michigan and Tennessee, Georgia's EPSDT program is limited to only Medicaid children. In all four study States, the local social service/welfare departments administer the AFDC and Medicaid only eligibility processes and thus are responsible for informing families with children about the basic benefits of the EPSDT program. In all the study States, staff from the local public health departments are responsible for EPSDT outreach. In Georgia, these

local staff notify all Medicaid children (not just those who have expressed an interest in the program) about EPSDT, primarily through mailings and phone calls, with some home visits if resources are available. They give families the names of providers who accept Medicaid clients and assist in scheduling appointments and arranging transportation. They recall children who are due for periodic screening exams, contact children overdue for screening, and followup on children who are referred for diagnosis and treatment. Outreach workers across the State are usually paraprofessionals with close ties to the community.

Although participation in Georgia's EPSDT program was open to both public and private providers, State officials report that the number of private physicians involved with EPSDT was small in 1989. This low participation rate is attributed to two factors -- a historical tension between local health departments and private providers, and outdated physician perceptions of the EPSDT program (e.g., that the claims payment process is slow and cumbersome). Unlike California, Georgia does not allow a "shadow" EPSDT program. Providers are not reimbursed for well-child care unless claims are submitted through the EPSDT system (although any Medicaid provider may bill for immunizations). It is believed, however, that unreimbursed well-child care occurs in this State. Georgia's reimbursement rate for EPSDT exams was higher than the Medicaid rate for a comparable routine office visit.

III. Michigan

Michigan's Medicaid program experienced very modest growth over time, with about 1.1 million recipients and expenditures of $2.0 billion in 1989, compared to about 1.1 million recipients and expenditures of $2.8 billion in 1992 (see Appendix Table D-1). Its share of Medicaid recipients decreased from 5 percent in 1989 to 3.7 percent in 1992. Its proportion of Medicaid expenditures nationwide also decreased from 3.7 percent in 1989 to 2.8 percent in 1992. As in the other study States, the proportion of Medicaid recipients under age 21 in both 1989 and 1992 was over half the State's Medicaid population (excluding children in capitated plan arrangements, institutions, and children dully eligible for Medicare and Medicaid). In 1989, there were 598,296 children under 21 who received Medicaid services, and by 1992, this number had grown to 624,662.

Michigan's income eligibility thresholds for Medicaid, as shown in Appendix Table D-2, were much lower than those of California, but considerably higher than those used by Georgia and Tennessee. Its AFDC need standard for a family of three in 1992 was $587 monthly (61 percent of the FPL), up from $575 monthly in 1989 (70 percent of the FPL). Its medically needy income level was $567 monthly for a family of three (59 percent of the FPL) in 1992 compared to $555 monthly (67 percent of the FPL) in 1989.

Beginning in early 1988, Michigan exercised the OBRA-87 option to extend Medicaid to pregnant women and infants with family income up to 185 percent of the FPL and children under age three with family income up to 100 percent of the FPL (see Appendix Table D-3). Michigan used the expansion option to raise its Medicaid income thresholds considerably for younger children. In April of 1990, Michigan complied with the federal mandate to cover all children up to age six with family income under 133 percent of poverty. Then in 1991, all children up to age eight with family incomes under 100 percent of FPL became eligible for Medicaid.

Michigan's EPSDT program is limited to only Medicaid children. The local social service/welfare departments administer the AFDC and Medicaid-only eligibility processes and therefore are responsible for informing families with children about the basic benefits of the EPSDT program.

Similar to the other States, local public health departments are responsible for EPSDT outreach and follow-up activities. However, in 1989, unlike most of the other States, Michigan's local public health departments were almost exclusively the only comprehensive EPSDT screening providers. In fact, private physicians were not permitted to become EPSDT providers in Michigan until 1986. Never more than 50 physicians statewide have ever received certification as comprehensive EPSDT providers. The State public health department, which certifies comprehensive EPSDT providers, required private physicians to meet the same standards traditionally imposed upon health departments. Basically, these standards specified the protocol to be followed, the equipment to be used and the staff required to carry out EPSDT screens. Few private providers have been willing to satisfy these requirements.

By 1992, the EPSDT provider pool in Michigan was greatly expanded by virtue of the addition of the "basic" screen under EPSDT. In this case, office-based physicians continued to provide usual well-child visit services to Medicaid children, but now these visits were counted as EPSDT basic screens. The provisions for comprehensive EPSDT providers were still in place and continued to include local health departments and a very small group of physicians. Also by 1992, fees for both types of EPSDT screens had increased over 1989 levels.

Given this situation, the Michigan Medicaid program has traditionally paid for a great deal of well-child care outside the EPSDT system, according to State officials. This situation in Michigan is highly unusual, and makes the "shadow" program there enormously important, especially in 1989.

IV. Tennessee

Tennessee's Medicaid program is close in size to the Georgia program. As shown in Appendix Table D-1, it had 785,231 recipients and expenditures of $1.7 billion in 1992, up from 542,595 recipients and less than $1 billion in expenditures in 1989. This placed Tennessee tenth among all States with regard to total Medicaid recipients, and 15th with regard to expenditures in 1992. The State's program accounted for roughly 2.5 percent of Medicaid recipients and a little under two percent of expenditures nationwide in both study years. Excluding persons in capitated plan arrangements, institutions and children dully eligible for Medicare and Medicaid, there were 312,570 Medicaid recipients under age 21 in 1989. By 1992, this number had grown to 458,588 persons.

Tennessee's income eligibility thresholds for Medicaid, as shown in Appendix Table D-2, were the lowest among the study States. Its AFDC need standard for a family of three in 1992 was $426 monthly (44 percent of the FPL), up from $387 monthly in 1989 (47 percent of the FPL). Tennessee's medically needy income level was $250 monthly for a family of three in both 1989 and 1992, representing 30 percent of the FPL in 1989 but only 26 percent of the FPL in 1992.

To its credit, Tennessee was one of the earliest States to take advantage of the OBRA-87 expansion coverage for pregnant women, infants, and young children (See Appendix Table D-3). Its expansion coverage started in 1987. In 1989, it covered pregnant women, infants, and children under age five to 100 percent of the FPL. Tennessee opted to raise this eligibility level to 150 percent of the FPL in January of 1990, and to the maximum of 185 percent in July of 1991. Like Georgia, Tennessee used the expansion option to raise its Medicaid income thresholds considerably for younger children. Tennessee continued these eligibility expansions throughout the study period, raising the eligible maximum age to seven in January of 1990, and then complying with federal law by raising the eligibility level to 133 percent of poverty for children under age six and to 100 percent for all children born after September 30, 1983.

Tennessee's EPSDT program is limited to only Medicaid children. As in other States, the local social service/welfare departments administer the AFDC and Medicaid-only eligibility processes and inform families about the basic benefits of the EPSDT program.

Similar to the other States, staff in local public health departments are responsible for EPSDT outreach and follow-up activities to all Medicaid-enrolled children. Generally, this outreach consisted of mail and telephone contact, with home visits when resources permitted. Both staff in local health departments and private physicians participated in Tennessee's EPSDT program in 1989 and 1992. However, there was not much of a financial incentive for private providers to qualify as EPSDT providers,

since the reimbursement rates for EPSDT were not significantly higher than the rates for a routine office visit under the regular Medicaid program.

Like Georgia, Tennessee officials reported that State regulations did not permit a "shadow" program of well-child visits. However, officials also indicated that their claims processing system was not structured to reject Medicaid claims for well-child care outside the EPSDT program.

V. Periodicity Schedules for Standard Well-Child Care

In this section, we describe the periodicity schedules for well-child visits and immunizations used in the EPSDT programs within the study States during the analysis years for this project. We also compare these State-specific schedules to guidelines set forth by the American Academy of Pediatrics.

A. American Academy of Pediatrics and State EPSDT Schedules for Well Child Visits

Under the EPSDT program, States are required to develop and disseminate periodicity schedules that outline at what ages and time intervals specific kinds of preventive or screening services are to be delivered to children. The federal regulations do not require that a common national standard be followed by all States.

There were important differences between the American Academy of Pediatrics (AAP) recommendations regarding the timing and frequency of well-child visits by age group compared to the State-specific EPSDT periodicity schedules for the analysis years (see Appendix Table D-4).

According to the AAP for both 1989 and 1992, a total of 20 visits was recommended from birth through age 20 years at the following intervals:

- children up to 1 year of age should receive a total of 6 visits at 2 - 3 month intervals;
- those aged 1 - 2 years should receive a total of 3 visits at 15, 18 and 24 months;
- children ages 3 - 5 years should have a total of 3 annual visits; and
- those at 6 years of age and above should have a total of 8 visits, one every other year.

APPENDIX TABLE D-4

American Academy of Pediatrics (AAP) Well-Child
Visit Schedule and State-Specific EPSDT
Screening Visit Schedules: Number of Visits by Age Category

1989

	AAP and Georgia	California	Michigan	Tennessee
Birth to 12 months	6	6	2-3	6
1-2 years	3	3	1	3
3-5 years	3	2	1	3
6-8 years	2	1	1	2
9-20 years	6	3	6	4
Total	20 visits	15 visits	11-12 visits	18 visits

1992

	AAP[1,3]	CA[3]	GA[3]	MI	TN[3]
Birth to 12 months	6[2]	6	6	6[4]	6
1-2 years	3	3	3	3	3
3-5 years	3	2	3	3	3
6-8 years	2	1	2	2	2
9-20 years	6	3	6	6	4
Total	20 visits	15 visits	20 visits	20 visits	18 visits

[1]AAP News, July 1991.

[2]Compared to 1989, one visit has been added for this age category specifically for newborns discharged in 24 hrs or less after delivery; however, because this visit does not apply to all newborns we did not count it here.

[3]No changes from 1989.

[4]Actual periodicity schedule chart (dated 9/1/90) does not show a visit for newborns during the delivery hospitalization but we know from our site visit that MI covers such a visit as EPSDT. However, because such in-hospital visits may not be reliably identifiable in the Tape-to-Tape files used in this study and given EPSDT screening visit schedules in the other 3 study States, we did not count this in-hospital newborn visit in MI either.

Georgia was the only study State to apply the AAP guidelines to its Medicaid child population for both 1989 and 1992. The remaining study States varied in the following ways from these national standards:

- Tennessee used the same EPSDT periodicity schedule for 1989 and 1992, recommending a total of 18 visits over a child's youth (birth through age 20 years). Overall, its schedule varied only slightly from AAP recommendations. In this State, 2 fewer visits were required for children ages 9 - 20 years. That is, while the AAP recommended a total of 6 biennial visits for children ages 9 years and over, Tennessee required a total of 4 visits at approximately 3-year intervals.

- California used the same EPSDT periodicity schedule for 1989 and 1992, recommending a total of 15 visits over a child's youth. Although its schedule was the same as AAP guidelines for younger children, California required 50 percent fewer visits than did the AAP for children starting at 4 years of age. Whereas the AAP recommended a total of 10 visits at one- and two-year intervals for children ages 4 to 20 years, California required a total of 5 visits at 2 to 4 year intervals for such children.

- For Michigan, only its 1989 schedule differed from AAP guidelines. However, the differences were quite substantial across all age groups with Michigan requiring many fewer visits and at longer intervening intervals than the AAP schedule specified. In 1989, Michigan recommended a total of 11 to 12 visits over a child's youth. For the first eight months of 1989, screens were recommended twice during the first year of life and every other year thereafter until age 21 years, for a total of 11 visits from birth to age 20 years. As of September, 1989, the schedule changed such that three visits were required during the first 18 months of life, followed by a visit every other year thereafter until age 21 years, for a total of 12 visits from birth to age 20 years.

In general, for both 1989 and 1992, when State EPSDT periodicity schedules differed from AAP guidelines, the States recommended fewer visits for selected age groups, usually older children.

B. American Academy of Pediatrics and State Immunization Schedules

As noted previously, States are required to develop and disseminate schedules for immunization services under EPSDT, but federal regulations do not require that a common national standard be followed. For the four States included in this study, there were several differences in the recommended ages and time intervals for the administration of selected immunizations (especially in 1992).

As shown in Appendix Table D-5, in 1989, the AAP schedule for common childhood immunizations recommended that:

- infants up to six months of age should receive three doses of the diphtheria-tetanus-pertussis (DTP) vaccine and two doses of an oral polio vaccine (OPV) at two-month intervals;

APPENDIX TABLE D-5

AAP and State-Specific Immunization Periodicity Schedules by Age Group, 1989 and 1992

1989 Schedules

Age Group	AAP Georgia Tennessee	California	Michigan
<12 months	3 DTP at 2, 4 & 6 months 2 OPV at 2 & 4 months	Same as AAP	Same as AAP
1-2 years	1 MMR at 15 months 1 DTP at 18 months 1 OPV at 18 months 1 Hib at 18 months	Same as AAP	1 MMR at 15 months 1 DTP at 18 months 1 OPV at 18 months
3-6 years	1 DTP at 4-6 years 1 OPV at 4-6 years	1 DTP at 4-6 years 1 OPV at 4-6 years 1 MMR at 4-6 years	Same as AAP
7-12 years	1 MMR at 11-12 years	None	Same as AAP
13-20 years	1 Td at 14-16 years	Same as AAP	Same as AAP

1992 Schedules

Age Group	AAP Michigan Tennessee	California	Georgia
<12 months	3 DTP at 2, 4 and 6 months 2 OPV at 2 and 4 months 2 Hib at 2 and 4 months 2 HBV at birth and 2 months	Same as AAP	3 DTP at 2, 4 and 6 months 2 OPV at 2 and 4 months 3 Hib at 2, 4 and 6 months 3 HBV at 2, 4 and 6 months
1-2 years	1 MMR at 15 months 1 DTP at 18 months 1 OPV at 18 months 1 Hib at 15 months 1 HBV at 18 months	1 MMR at 15 months 1 DTP at 15 months 1 OPV at 15 months 1 Hib at 15 months 1 HBV at 18 months	1 MMR at 15 months 1 DTP at 15 months 1 OPV at 15 months
3-6 years	1 DTP at 4-6 years 1 OPV at 4-6 years	1 DTP at 4-6 years 1 OPV at 4-6 years 1 MMR at 4-6 years	1 DTP at 4-6 years 1 OPV at 4-6 years 1 MMR at 4-6 years
7-12 years	1 MMR at 11-12 years	None	None
13-20 years	1 Td at 14-16 years	Same as AAP	Same as AAP

DTP = Diphtheria-tetanus-pertussis
OPV = Oral polio vaccine
MMR = Measles-mumps-rubella
Hib = Haemophilus influenza type b
Td = Tetanus-diphtheria
HBV = Hepatitis B virus

Note: Documentation available for MI 1992 immunization recommendations was somewhat ambiguous. Because MI closely mirrored the AAP schedule in 1989, we assumed similarity for 1992.

Documentation available for CA was dated 4/91 and excluded specific recommendations for the HBV. Because CA closely mirrored the AAP schedule in 1989, we assumed the 1992 AAP guidelines for HBV for CA 1992.

Documentation for immunization guidelines for TN 1992 was unavailable; however, state officials indicated that the information we used for the 1989 analysis was "still current" for 1992. Because TN followed AAP recommendations for 1989, we have assumed similarity for 1992 as well.

- between 15 and 18 months of age, toddlers should receive an additional DTP and OPV, plus single doses of the measles-mumps-rubella (MMR) and the haemophilus influenza type b (Hib) vaccines;
- children between the ages of four and six years should receive a fourth dose of DTP and a third OPV;
- pre-teens (ages 11 and 12 years) should receive a second MMR; and
- adolescents between the ages of 14 and 16 years should receive a tetanus-diphtheria (Td) booster.

For 1989, in contrast to the periodicity schedules for well-child visits described above, there were few variations from the AAP guidelines among the four State-specific schedules for the five common childhood immunizations. Both Georgia and Tennessee followed AAP guidelines for all immunizations. California also followed AAP guidelines with one exception -- the second MMR vaccination was recommended at school entry (e.g., ages four to six years) rather than at 11 to 12 years of age. Michigan also followed AAP guidelines, except that the State had no specific recommendation for administration of the Hib vaccine.[2]

By 1992, the AAP had made two modifications to its guidelines for common childhood immunizations, as follows (see Appendix Table D-5):

- One new immunization--the Hepatitis B vaccine (HBV)--was added to the set of standard vaccinations recommended for all children. Three doses of HBV were to be administered at birth,[3] 2 months and 18 months of age.
- Of the original set of five common immunizations, the AAP changed its guidelines for only one--the Hib vaccine. While a single dose of Hib was recommended at 18 months of age in 1989, by 1992, the AAP was recommending a three-dose series[4] at 2, 4 and 15 months of age.

---

[2]Michigan's 1989 periodicity schedule was not clear regarding the administration of the second MMR. For this analysis, we assumed that the State followed AAP guidelines.

[3]Although the AAP recommended a HBV injection for newborns during the delivery hospitalization, for analytic purposes, we examined only HBV immunizations by 2 and 18 months of age in 1992 for several reasons. Such injections are unlikely to be identifiable in the Tape-to-Tape files used for this study. Also, capturing HBVs administered at birth would have required identification of inpatient facility claims for delivery and accompanying attending physician claims (if any) for related professional services (including HBV injections), all of which was beyond the scope of this project.

[4]Only two types of Hib vaccines were approved by the AAP for children under 15 months of age. One vaccine required a three-dose series (as represented in Appendix Table D-5), while the other vaccine required a four-dose series (additional injection at 6 months of age). To simplify our analyses, for all children, we assumed use of the three-dose schedule for the Hib in 1992.

Michigan and Tennessee followed the 1992 AAP guidelines for all common childhood immunizations. California's 1992 immunization periodicity schedule differed in two ways: (1) the fourth dose of DTP and the third dose of OPV were required earlier (at 15 months of age) than was recommended by the AAP (at 18 months of age), and (2) as in 1989, the second MMR was also required earlier at school entry (between 4 and 6 years of age) than was recommended by the AAP (between 11 and 12 years of age).

Although Georgia's periodicity schedule for immunizations matched AAP guidelines in 1989, of the four study States, Georgia's 1992 recommendations differed the most from corresponding AAP guidelines: (1) while the AAP recommended the third Hib at 15 months of age, Georgia required administration of this immunization much earlier at 6 months of age, (2) the three-injection series for HBV under AAP guidelines was scheduled for administration at birth, 2 and 18 months of age, while for Georgia, these injections were due at 2, 4 and 6 months of age, (3) like California, Georgia required earlier administration of the fourth dose of DTP and the third dose of OPV (at 15 months of age) than was recommended by the AAP (at 18 months of age), and (4) also like California, Georgia required an earlier administration of the second MMR at school entry (between 4 and 6 years of age) than was recommended by the AAP (between 11 and 12 years of age).

In general, with the exception of Michigan 1989, when differences existed between State-specific and AAP periodicity guidelines, the State schedules (for California 1989 and 1992, and Georgia 1992) required earlier administration of selected immunizations than the AAP recommended schedule. These State schedules were more stringent than AAP guidelines; that is, for a child below 7 years of age, the State schedules required more immunizations, sometimes at shorter intervals.

Appendix E

Computation Methods for Participation and Completion Rates for Selected Well-Child Services

APPENDIX E

COMPUTATION METHODS FOR PARTICIPATION AND COMPLETION RATES FOR SELECTED WELL-CHILD SERVICES

I. EPSDT Participation and Visit Rates

To assess the penetration of the EPSDT program among Medicaid-enrolled children and the level of screening services received under the program, the MEDSTAT Group developed consistent and accurate measures of participation and service use with the claims data. To do so, we assigned two weights to each child in the database -- a participation weight and a visit weight. The participation weight ($\overline{P}$) reflects the child's expected probability of participating in EPSDT during the year while the visit weight ($\overline{S}$) reflects the child's expected number of EPSDT screening visits during the analysis year. The values assigned for both weights are adjusted for the child's age and enrollment duration and the State's EPSDT screening periodicity schedule.

To derive the weights, we first determined the recommended number of screening visits for a child enrolled for the full 12 months of the analysis year based on the State's applicable periodicity schedule and the age of the child at the end of that year. For younger children, the recommended number of screening visits was determined for each month of age. For children in age groups for which only one screening visit was recommended every other year, the child was assumed to be equally likely to have the screening visit anytime during the two years. Therefore, the recommended number of screening visits was one-half (0.5) visit; that is, the probability of an event occurring in either of two periods under a uniform distribution function over the two periods. Similarly, in California for 1989 and 1992, where older children were expected to have EPSDT screening visits only once every four years, the recommended number of screening visits was the probability of a single event occurring in any of four periods under a uniform distribution function over the four periods, or 0.25.

We then adjusted for duration of enrollment by multiplying the number of recommended screening visits by the fraction of the year that the child was enrolled, or if the child was less than 12 months of age, the fraction of the child's life during which s/he was enrolled. Thus, the expected number of screening visits, $\overline{S}_{ij}$, for the ith child in the jth age group for age groups under 12 months is:

$$\overline{S}_{ij} = \frac{Months\ \ Enrolled_{ij}}{Months\ of\ \ Life_{ij}}\ x\ No.\ of\ Recommended\ \ Visits_j$$

and for the ith child in the jth age group for age groups 12 months or greater is:

$$\bar{S}_{ij} = \frac{Months\ \ Enrolled_{ij}}{12}\ x\ No.\ of\ Recommended\ \ Visits_j .$$

The child's visit weight is simply $\bar{S}_{ij}$. The participation weight, the probability of the child participating in EPSDT, is equal to one if the number of expected screens for the child is greater than or equal to one. Otherwise, the child's participation weight is equal to $\bar{S}_{ij}$, that is:

$$\text{if } \bar{S}_{ij} \geq 1 \text{ then } \bar{P}_{ij} = 1;$$

$$\text{else } \bar{P}_{ij} = \bar{S}_{ij} .$$

We used these weights to compute participation and visit rates for different subgroups of children. Participation rates give the percentages of children with at least one screening visit among those recommended (expected) to have at least one full screening visit. The numerator for the participation rate is the count of individuals with any EPSDT screening visits in the 1989 claims files (P_{ij} = 1 for children with at least one full EPSDT screening visit and zero for children with no EPSDT screening visits). The denominator is the total expected number of participants, computed by summing the participation weights over the child population being tabulated:

$$Participation\ Rate = \frac{Actual\ No.\ of\ Participants}{Expected\ No.\ of\ Participants} = \frac{\sum_{ij} P_{ij}}{\sum_{ij} \bar{P}_{ij}} .$$

Visit rates give the percentages of total recommended (expected) screening visits children in different subgroups actually had. The numerator of the visit rate is the total number of EPSDT full screening visits children had (S_{ij} = the number of screening visits the ijth child actually had during the year). The denominator is the total expected number of screening visits, computed by summing children's visit weights:

$$Visit\ Rate = \frac{Actual\ No.\ of\ Screens}{Expected\ No.\ of\ Screens} = \frac{\sum_{ij} S_{ij}}{\sum_{ij} \bar{S}_{ij}} .$$

II. Immunization Completion Rates

To assess compliance with the recommended immunization schedules, we developed completion weights that reflect the child's expected number of immunizations by type during the analysis year. The assigned weights are adjusted for the child's age and enrollment duration and the State's immunization periodicity schedule. With these rates, we were able to compute overall and vaccine-specific completion rates similar to the visit rates described above for EPSDT screening visits:

$$\text{Immunization Completion Rate} = \frac{\text{Actual No. of Immunizations}}{\text{Expected No. of Immunizations}} = \frac{\sum_{ijk} I_{ijk}}{\sum_{ijk} \bar{I}_{ijk}}.$$

where I_{ijk} is the actual number of Medicaid-covered immunizations of type k the ith child in the jth age group had during the analysis year and $\bar{I}_{ijk}$ is the number of immunizations the child should have had during his/her Medicaid enrollment period.

Children who have missed their immunizations at the recommended age frequently will obtain them at older ages -- most often at school entry. The Medicaid claims data contain many immunizations received at ages other than the recommended ages. Because the completion rate computed as described above gives credit for any and all well-child immunizations received, regardless of whether the immunization was age-appropriate, older children catching up on immunizations will appear to be more compliant with the periodicity schedules than they really are. Because it is important for children to receive immunizations early and at the appropriate age intervals, we computed a second set of immunization completion rates counting only those immunizations that are age-appropriate (AA):

$$\text{Age - Appropriate Completion Rate} = \frac{\text{Age - Appropriate No. of Immunizations}}{\text{Expected No. of Immunizations}} = \frac{\sum_{ijk} I_{ijk}^{AA}}{\sum_{ijk} \bar{I}_{ijk}}$$

$$\text{where if } I_{ijk} > \bar{I}_{ijk} \text{ then } I_{ijk}^{AA} = \bar{I}_{ijk};$$
$$\text{else } I_{ijk}^{AA} = I_{ijk}.$$

Appendix F

Probability of Receiving Well-Child Visits:
Pooled Logistic Regression Models

APPENDIX TABLE F-1

LOGISTIC REGRESSION RESULTS: PROBABILITY OF RECEIVING WELL-CHILD VISITS, CHILDREN UNDER 3 YEARS OF AGE ONLY

POOLED MODEL INCLUDING INTERACTION TERM AND DUMMY VARIABLE FOR YEAR - CALIFORNIA

Dependent Variable: PARTIC			
Regressor *(X)*	Coefficient	Standard Error	Odds Ratio
Intercept	-3.086 ***	0.097	
EP_AG1 (Age < 12 months)	1.058 ***	0.016	2.881
BLACK (Black Race)	-0.138 ***	0.022	0.871
OTHER (Other Race)	0.356 ***	0.027	1.428
UNKNOWN (Unknown Race)	-0.110 ***	0.032	0.896
HISPANIC (Hispanic Ethnicity)	-0.344 ***	0.027	0.709
FEMALE (Sex)	0.016	0.013	1.016
URBAN (Urban Residence)	0.523 ***	0.087	1.687
SUBURBAN (Surburban Residence)	0.397 ***	0.086	1.487
UNIF1 (Blind/Disabled)	-0.408 ***	0.094	0.665
UNIF3 (Foster Care)	0.334 ***	0.043	1.397
UNIF4 (Poverty-Related)	0.348 ***	0.026	1.417
UNIF5 (Medically Needy)	-0.033 *	0.015	0.968
ADJNOMO12 (Months Enrolled in Medicaid)	0.300 ***	0.002	
SHORTAGE (Shortage Area)	-0.226 ***	0.019	0.798
CLINCP1K (Participating Clinics per 1,000 Population)	1.336 ***	0.170	
1/P02A (Participating Primary Care Providers/Child Medicaid Enrollees)	21.387 ***	4.692	
OVERKID (Children with data in both 1989 and 1992)	0.269 ***	0.020	1.308
1992 Year Dummy	-0.001	0.036	0.999
(1/P02A) * 1992 Year Dummy	44.224 ***	7.307	
-2 LOG L	152,915.92		
Chi-Square Statistic	32,318.05		
P Value	0.000		
N	134,792		

*** p < .001; ** p < .01; * p < .05

Excluded categories: Ages 1 - 2 years, White, Male, Rural, AFDC, and 1989.

APPENDIX TABLE F-2

LOGISTIC REGRESSION RESULTS: PROBABILITY OF RECEIVING WELL-CHILD VISITS, CHILDREN UNDER 3 YEARS OF AGE ONLY

POOLED MODEL INCLUDING INTERACTION TERM AND DUMMY VARIABLE FOR YEAR - GEORGIA

Dependent Variable: PARTIC			
Regressor *(X)*	Coefficient	Standard Error	Odds Ratio
Intercept	-2.854 ***	0.098	
EP_AG1 (Age < 12 months)	1.226 ***	0.035	3.406
BLACK (Black Race)	0.352 ***	0.031	1.422
OTHER (Other Race)	-0.088	0.167	0.916
UNKNOWN (Unknown Race)	0.514 **	0.184	1.672
HISPANIC (Hispanic Ethnicity)	0.056	0.189	1.058
FEMALE (Sex)	0.002	0.026	1.002
URBAN (Urban Residence)	-0.437 ***	0.043	0.646
SUBURBAN (Surburban Residence)	-0.478 ***	0.042	0.620
UNIF1 (Blind/Disabled)	-0.746 ***	0.170	0.474
UNIF3 (Foster Care)	0.110	0.136	1.117
UNIF4 (Poverty-Related)	0.165 ***	0.034	1.179
UNIF5 (Medically Needy)	-0.074	0.044	0.929
ADJNOMO12 (Months Enrolled in Medicaid)	0.230 ***	0.005	
SHORTAGE (Shortage Area)	0.034	0.027	1.034
CLINCP1K (Participating Clinics per 1,000 Population)	1.906 ***	0.303	
1/P02A (Participating Primary Care Providers/Child Medicaid Enrollees)	-21.898 ***	5.810	
OVERKID (Children with data in both 1989 and 1992)	0.218 ***	0.058	1.243
1992 Year Dummy	0.492 ***	0.081	1.636
(1/P02A) * 1992 Year Dummy	4.770	7.669	
-2 LOG L		33,291.68	
Chi-Square Statistic		4,162.31	
P Value		0.000	
N		27,192	

*** p < .001; ** p < .01; *p < .05

Excluded categories: Ages 1 - 2 years, White, Male, Rural, AFDC, and 1989.

APPENDIX TABLE F-3

LOGISTIC REGRESSION RESULTS: PROBABILITY OF RECEIVING WELL-CHILD VISITS, CHILDREN UNDER 3 YEARS OF AGE ONLY

POOLED MODEL INCLUDING INTERACTION TERM AND DUMMY VARIABLE FOR YEAR - MICHIGAN

Dependent Variable: PARTIC			
Regressor *(X)*	Coefficient	Standard Error	Odds Ratio
Intercept	-2.408 ***	0.083	0.090
EP_AG1 (Age < 12 months)	1.526 ***	0.034	4.598
BLACK (Black Race)	-0.150 ***	0.031	0.861
OTHER (Other Race)	-0.049	0.111	0.952
UNKNOWN (Unknown Race)	-0.227	0.143	0.797
HISPANIC (Hispanic Ethnicity)	-0.010	0.124	0.990
FEMALE (Sex)	0.015	0.025	1.016
URBAN (Urban Residence)	0.017	0.051	1.017
SUBURBAN (Surburban Residence)	-0.016	0.055	0.984
UNIF1 (Blind/Disabled)	-0.590 ***	0.166	0.554
UNIF4 (Poverty-Related)	0.209 ***	0.035	1.233
UNIF5 (Medically Needy)	0.021	0.039	1.021
ADJNOMO12 (Months Enrolled in Medicaid)	0.258 ***	0.004	
MOS_PCCM (Months Enrolled in a PCCM Program)	-0.009	0.005	
SHORTAGE (Shortage Area)	-0.217 ***	0.032	0.805
CLINCP1K (Participating Clinics per 1,000 Population)	0.452 **	0.150	
1/P02A (Participating Primary Care Providers/Child Medicaid Enrollees)	5.874	3.179	
OVERKID (Children with data in both 1989 and 1992)	0.150 ***	0.037	1.162
1992 Year Dummy	0.416 ***	0.052	1.515
(1/P02A) * 1992 Year Dummy	-3.467	3.819	
-2 LOG L	37,447.64		
Chi-Square Statistic	5,385.53		
P Value	0.000		
N	31,810		

*** $p < .001$; ** $p < .01$; * $p < .05$

Excluded categories: Ages 1 - 2 years, White, Male, Rural, AFDC/Foster Care, and 1989.

APPENDIX TABLE F-4

LOGISTIC REGRESSION RESULTS: PROBABILITY OF RECEIVING WELL-CHILD VISITS, CHILDREN UNDER 3 YEARS OF AGE ONLY

POOLED MODEL INCLUDING INTERACTION TERM AND DUMMY VARIABLE FOR YEAR - TENNESSEE

Dependent Variable: PARTIC			
Regressor *(X)*	Coefficient	Standard Error	Odds Ratio
Intercept	-1.554 ***	0.099	
EP_AG1 (Age < 12 months)	1.362 ***	0.042	3.903
BLACK (Black Race)	-0.205 ***	0.037	0.815
OTHER (Other Race)	0.008	0.205	1.008
UNKNOWN (Unknown Race)	0.002	0.258	1.002
HISPANIC (Hispanic Ethnicity)	-0.298	0.290	0.743
FEMALE (Sex)	0.005	0.031	1.005
URBAN (Urban Residence)	-0.624 ***	0.055	0.536
SUBURBAN (Surburban Residence)	-0.268 ***	0.055	0.765
UNIF1 (Blind/Disabled)	-0.995 ***	0.190	0.370
UNIF3 (Foster Care)	-0.260	0.161	0.771
UNIF4 (Poverty-Related)	0.289 ***	0.036	1.336
UNIF5 (Medically Needy)	-0.006	0.060	0.994
ADJNOMO12 (Months Enrolled in Medicaid)	0.258 ***	0.005	
MOS_PCCM (Months Enrolled in a PCCM Program)	-0.038	0.025	
SHORTAGE (Shortage Area)	-0.246 ***	0.043	0.782
CLINCP1K (Participating Clinics per 1,000 Population)	-0.374 ***	0.108	
1/P02A (Participating Primary Care Providers/Child Medicaid Enrollees)	-37.446 ***	7.034	
OVERKID (Children with data in both 1989 and 1992)	-0.029	0.050	0.971
1992 Year Dummy	0.002	0.077	1.002
(1/P02A) * 1992 Year Dummy	20.175 *	9.243	
-2 LOG L	24,569.41		
Chi-Square Statistic	3,679.29		
P Value	0.000		
N	20,581		

*** p < .001; ** p < .01; * p < .05

Excluded categories: Ages 1 - 2 years, White, Male, Rural, AFDC, and 1989.

Appendix G

Number of Well-Child Visits Among Users:
Pooled Linear Regression Models

APPENDIX TABLE G-1

ORDINARY LEAST SQUARES RESULTS: ALL WELL-CHILD VISITS, USERS UNDER 3 YEARS OF AGE ONLY

POOLED MODEL INCLUDING INTERACTION TERM AND THE YEAR DUMMY VARIABLE FOR YEAR - CALIFORNIA

Dependent Variable: GWELL		
Regressor *(X)*	Coefficient	Standard Error
Intercept	-0.055	0.059
EP_AG1 (Age < 12 months)	0.553 ***	0.009
BLACK (Black Race)	-0.077 ***	0.013
OTHER (Other Race)	0.202 ***	0.014
UNKNOWN (Unknown Race)	0.157 ***	0.021
HISPANIC (Hispanic Ethnicity)	-0.195 ***	0.014
FEMALE (Sex)	0.006	0.007
URBAN (Urban Residence)	0.233 ***	0.053
SUBURBAN (Surburban Residence)	0.151 **	0.053
UNIF1 (Blind/Disabled)	-0.270 ***	0.059
UNIF3 (Foster Care)	0.072 **	0.023
UNIF4 (Poverty-Related)	0.250 ***	0.016
UNIF5 (Medically Needy)	0.135 ***	0.009
ADJNOMO12 (Months Enrolled in Medicaid)	0.151 ***	0.001
SHORTAGE (Shortage Area)	-0.098 ***	0.011
CLINCP1K (Participating Clinics per 1,000 Population)	0.282 **	0.098
OVERKID (Service use in '89 and '92)	0.007	0.013
1/P02A (Participating Primary Care Providers/Child Medicaid Enrollees)	23.203 ***	2.730
1992 Year Dummy	0.068 **	0.022
(1/P02A) * 1992 Year Dummy	7.811	4.102
F Statistic	685.63	
P Value	0.000	
N	74,794	
R^2	0.148	

*** p < .001; ** p < .01; * p < .05

Excluded categories: Ages 1 - 2 years, White, Male, Rural, AFDC, and 1989.

APPENDIX TABLE G-2

ORDINARY LEAST SQUARES RESULTS: ALL WELL-CHILD VISITS, USERS UNDER 3 YEARS OF AGE ONLY

POOLED MODEL INCLUDING INTERACTION TERM AND THE YEAR DUMMY VARIABLE FOR YEAR - GEORGIA

Dependent Variable: GWELL		
Regressor *(X)*	Coefficient	Standard Error
Intercept	0.214 **	0.074
EP_AG1 (Age < 12 months)	0.666 ***	0.024
BLACK (Black Race)	0.091 ***	0.022
OTHER (Other Race)	0.187	0.125
UNKNOWN (Unknown Race)	-0.022	0.122
HISPANIC (Hispanic Ethnicity)	-0.311 *	0.141
FEMALE (Sex)	-0.001	0.018
URBAN (Urban Residence)	-0.121 ***	0.028
SUBURBAN (Surburban Residence)	-0.172 ***	0.027
UNIF1 (Blind/Disabled)	-0.074	0.126
UNIF3 (Foster Care)	-0.107	0.092
UNIF4 (Poverty-Related)	0.161 ***	0.023
UNIF5 (Medically Needy)	-0.003	0.030
ADJNOMO12 (Months Enrolled in Medicaid)	0.131 ***	0.004
SHORTAGE (Shortage Area)	-0.077 ***	0.019
CLINCP1K (Participating Clinics per 1,000 Population)	0.780 ***	0.166
OVERKID (Service use in '89 and '92)	-0.086	0.046
1/P02A (Participating Primary Care Providers/Child Medicaid Enrollees)	-4.739	4.689
1992 Year Dummy	0.149 *	0.062
(1/P02A) * 1992 Year Dummy	8.633	5.735
F Statistic	95.62	
P Value	0.000	
N	12,314	
R^2	0.129	

*** p < .001; ** p < .01; * p < .05

Excluded categories: Ages 1 - 2 years, White, Male, Rural, AFDC, and 1989.

APPENDIX TABLE G-3

ORDINARY LEAST SQUARES RESULTS: ALL WELL-CHILD VISITS, USERS UNDER 3 YEARS OF AGE ONLY

POOLED MODEL INCLUDING INTERACTION TERM AND THE YEAR DUMMY VARIABLE FOR YEAR - MICHIGAN

Dependent Variable: GWELL		
Regressor *(X)*	Coefficient	Standard Error
Intercept	-0.114	0.069
EP_AG1 (Age < 12 months)	1.126 ***	0.026
BLACK (Black Race)	-0.183 ***	0.025
OTHER (Other Race)	-0.017	0.090
UNKNOWN (Unknown Race)	-0.206	0.124
HISPANIC (Hispanic Ethnicity)	-0.072	0.102
FEMALE (Sex)	0.006	0.020
URBAN (Urban Residence)	0.079 *	0.039
SUBURBAN (Surburban Residence)	0.004	0.043
UNIF1 (Blind/Disabled)	-0.135	0.152
UNIF4 (Poverty-Related)	0.253 ***	0.028
UNIF5 (Medically Needy)	0.044	0.032
ADJNOMO12 (Months Enrolled in Medicaid)	0.180 ***	0.004
MOS_PCCM (Months enrolled in a PCCM program)	-0.017 ***	0.004
SHORTAGE (Shortage Area)	-0.007	0.025
CLINCP1K (Participating Clinics per 1,000 Population)	0.047	0.114
OVERKID (Service use in '89 and '92)	-0.033	0.032
1/P02A (Participating Primary Care Providers/Child Medicaid Enrollees)	-0.704	2.565
1992 Year Dummy	0.235 ***	0.043
(1/P02A) * 1992 Year Dummy	17.244 ***	3.005
F Statistic	189.53	
P Value	0.000	
N	19,066	
R^2	0.159	

*** p < .001; ** p < .01; * p < .05

Excluded categories: Ages 1 - 2 years, White, Male, Rural, AFDC/Foster Care, and 1989.

APPENDIX TABLE G-4

ORDINARY LEAST SQUARES RESULTS: ALL WELL-CHILD VISITS, USERS UNDER 3 YEARS OF AGE ONLY

POOLED MODEL INCLUDING INTERACTION TERM AND THE YEAR DUMMY VARIABLE FOR YEAR - TENNESSEE

Dependent Variable: GWELL		
Regressor (X)	Coefficient	Standard Error
Intercept	0.079	0.079
EP_AG1 (Age < 12 months)	0.982 ***	0.029
BLACK (Black Race)	-0.258 ***	0.028
OTHER (Other Race)	-0.143	0.161
UNKNOWN (Unknown Race)	0.089	0.208
HISPANIC (Hispanic Ethnicity)	0.319	0.233
FEMALE (Sex)	-0.014	0.023
URBAN (Urban Residence)	-0.142 ***	0.038
SUBURBAN (Surburban Residence)	0.075 *	0.037
UNIF1 (Blind/Disabled)	-0.235	0.176
UNIF3 (Foster Care)	0.009	0.129
UNIF4 (Poverty-Related)	0.236 ***	0.027
UNIF5 (Medically Needy)	-0.006	0.047
ADJNOMO12 (Months Enrolled in Medicaid)	0.161 ***	0.004
MOS_PCCM (Months enrolled in a PCCM program)	-0.010	0.021
SHORTAGE (Shortage Area)	0.089 **	0.030
CLINCP1K (Participating Clinics per 1,000 Population)	-0.336 ***	0.077
OVERKID (Service use in '89 and '92)	0.022	0.040
1/P02A (Participating Primary Care Providers/Child Medicaid Enrollees)	11.155 *	5.438
1992 Year Dummy	0.064	0.059
(1/P02A) * 1992 Year Dummy	19.199 **	7.002
F Statistic	101.30	
P Value	0.000	
N	11,495	
R^2	0.150	

*** p < .001; ** p < .01; *p < .05

Excluded categories: Ages 1 - 2 years, White, Male, Rural, AFDC, and 1989.

Appendix H

Probability of Receiving EPSDT Screening Visits:
Pooled Logistic Regression Models

APPENDIX TABLE H-1

LOGISTIC REGRESSION RESULTS: PROBABILITY OF RECEIVING EPSDT SCREENING VISITS, CHILDREN UNDER 3 YEARS OF AGE ONLY

POOLED MODEL INCLUDING INTERACTION TERM AND DUMMY VARIABLE FOR YEAR - CALIFORNIA

Dependent Variable: OLDPART			
Regressor *(X)*	Coefficient	Standard Error	Odds Ratio
Intercept	-3.013 ***	0.096	
EP_AG1 (Age < 12 months)	0.988 ***	0.015	2.685
BLACK (Black Race)	-0.078 ***	0.021	0.925
OTHER (Other Race)	0.170 ***	0.026	1.185
UNKNOWN (Unknown Race)	-0.146 ***	0.032	0.865
HISPANIC (Hispanic Ethnicity)	-0.162 ***	0.025	0.850
FEMALE (Sex)	0.015	0.012	1.015
URBAN (Urban Residence)	0.346 ***	0.086	1.413
SUBURBAN (Surburban Residence)	0.364 ***	0.085	1.439
UNIF1 (Blind/Disabled)	-0.380 ***	0.093	0.684
UNIF3 (Foster Care)	0.244 ***	0.042	1.277
UNIF4 (Poverty-Related)	0.338 ***	0.026	1.402
UNIF5 (Medically Needy)	-0.039 **	0.015	0.962
ADJNOMO12 (Months Enrolled in Medicaid)	0.280 ***	0.002	
SHORTAGE (Shortage Area)	-0.205 ***	0.019	0.815
CLINCP1K (Participating Clinics per 1,000 Population)	1.877 ***	0.168	
1/P02A (Participating Primary Care Providers/Child Medicaid Enrollees)	20.033 ***	4.599	
OVERKID (Children with data in both 1989 and 1992)	0.279 ***	0.020	1.321
1992 Year Dummy	0.154 ***	0.036	1.167
(1/P02A) * 1992 Year Dummy	27.659 ***	7.126	
-2 LOG L	157,444.77		
Chi-Square Statistic	29,199.42		
P Value	0.000		
N	134,792		

*** p < .001; ** p < .01; * p < .05

Excluded categories: Ages 1 - 2 years, White, Male, Rural, AFDC, and 1989.

APPENDIX TABLE H-2

LOGISTIC REGRESSION RESULTS: PROBABILITY OF RECEIVING EPSDT SCREENING VISITS, CHILDREN UNDER 3 YEARS OF AGE ONLY

POOLED MODEL INCLUDING INTERACTION TERM AND DUMMY VARIABLE FOR YEAR - GEORGIA

Dependent Variable: OLDPART			
Regressor *(X)*	Coefficient	Standard Error	Odds Ratio
Intercept	-2.361 ***	0.099	
EP_AG1 (Age < 12 months)	1.368 ***	0.038	3.926
BLACK (Black Race)	0.150 ***	0.033	1.162
OTHER (Other Race)	-0.049	0.168	0.952
UNKNOWN (Unknown Race)	0.209	0.199	1.232
HISPANIC (Hispanic Ethnicity)	-0.044	0.190	0.957
FEMALE (Sex)	-0.052	0.029	0.949
URBAN (Urban Residence)	-0.767 ***	0.048	0.464
SUBURBAN (Surburban Residence)	-0.330 ***	0.048	0.719
UNIF1 (Blind/Disabled)	-0.873 ***	0.172	0.418
UNIF3 (Foster Care)	0.186	0.153	1.204
UNIF4 (Poverty-Related)	0.134 ***	0.037	1.144
UNIF5 (Medically Needy)	-0.238 ***	0.046	0.789
ADJNOMO12 (Months Enrolled in Medicaid)	0.311 ***	0.005	
SHORTAGE (Shortage Area)	-0.081 **	0.030	0.922
CLINCP1K (Participating Clinics per 1,000 Population)	0.665 *	0.329	
1/P02A (Participating Primary Care Providers/Child Medicaid Enrollees)	-20.656 ***	5.673	
OVERKID (Children with data in both 1989 and 1992)	0.200 ***	0.057	1.222
1992 Year Dummy	0.492 ***	0.083	1.635
(1/P02A) * 1992 Year Dummy	23.183 **	7.998	
-2 LOG L	29,366.85		
Chi-Square Statistic	6,570.49		
P Value	0.000		
N	27,192		

*** p < .001, ** p < .01; *p < .05

Excluded categories: Ages 1 - 2 years, White, Male, Rural, AFDC, and 1989.

APPENDIX TABLE H-3

LOGISTIC REGRESSION RESULTS: PROBABILITY OF RECEIVING EPSDT SCREENING VISITS, CHILDREN UNDER 3 YEARS OF AGE ONLY

POOLED MODEL INCLUDING INTERACTION TERM AND DUMMY VARIABLE FOR YEAR - MICHIGAN

Dependent Variable: OLDPART			
Regressor (X)	Coefficient	Standard Error	Odds Ratio
Intercept	-2.507 ***	0.090	
EP_AG1 (Age < 12 months)	0.303 ***	0.035	1.354
BLACK (Black Race)	-0.271 ***	0.035	0.763
OTHER (Other Race)	0.089	0.118	1.094
UNKNOWN (Unknown Race)	-0.140	0.172	0.870
HISPANIC (Hispanic Ethnicity)	0.088	0.134	1.092
FEMALE (Sex)	-0.003	0.028	0.997
URBAN (Urban Residence)	-0.509 ***	0.050	0.601
SUBURBAN (Surburban Residence)	-0.213 ***	0.055	0.808
UNIF1 (Blind/Disabled)	-0.911 ***	0.213	0.402
UNIF4 (Poverty-Related)	0.053	0.038	1.054
UNIF5 (Medically Needy)	-0.159 ***	0.044	0.853
ADJNOMO12 (Months Enrolled in Medicaid)	0.203 ***	0.005	
MOS_PCCM (Months Enrolled in a PCCM Program)	-0.107 ***	0.007	
SHORTAGE (Shortage Area)	-0.315 ***	0.033	0.730
CLINCP1K (Participating Clinics per 1,000 Population)	0.292 *	0.143	
1/P02A (Participating Primary Care Providers/Child Medicaid Enrollees)	-0.214	3.450	
OVERKID (Children with data in both 1989 and 1992)	0.298 ***	0.045	1.346
1992 Year Dummy	0.362 ***	0.061	1.436
(1/P02A) * 1992 Year Dummy	-6.573	4.132	
-2 LOG L	32,042.78		
Chi-Square Statistic	3,465.78		
P Value	0.000		
N	31,810		

*** p < .001; ** p < .01; * p < .05

Excluded categories: Ages 1 - 2 years, White, Male, Rural, AFDC/Foster Care, and 1989.

APPENDIX TABLE H-4

LOGISTIC REGRESSION RESULTS: PROBABILITY OF RECEIVING EPSDT SCREENING VISITS, CHILDREN UNDER 3 YEARS OF AGE ONLY

POOLED MODEL INCLUDING INTERACTION TERM AND DUMMY VARIABLE FOR YEAR - TENNESSEE

Dependent Variable: OLDPART			
Regressor *(X)*	Coefficient	Standard Error	Odds Ratio
Intercept	-1.932 ***	0.100	
EP_AG1 (Age < 12 months)	1.051 ***	0.041	2.861
BLACK (Black Race)	0.095 **	0.038	1.100
OTHER (Other Race)	0.131	0.207	1.140
UNKNOWN (Unknown Race)	0.163	0.261	1.177
HISPANIC (Hispanic Ethnicity)	0.087	0.291	1.091
FEMALE (Sex)	0.044	0.031	1.044
URBAN (Urban Residence)	-0.279 ***	0.055	0.757
SUBURBAN (Surburban Residence)	-0.024	0.055	0.977
UNIF1 (Blind/Disabled)	-0.583 **	0.185	0.558
UNIF3 (Foster Care)	-0.264	0.164	0.768
UNIF4 (Poverty-Related)	0.223 ***	0.037	1.250
UNIF5 (Medically Needy)	-0.068	0.061	0.934
ADJNOMO12 (Months Enrolled in Medicaid)	0.262 ***	0.005	
MOS_PCCM (Months Enrolled in a PCCM Program)	-0.051 *	0.025	
SHORTAGE (Shortage Area)	-0.061	0.043	0.941
CLINCP1K (Participating Clinics per 1,000 Population)	0.123	0.113	
1/P02A (Participating Primary Care Providers/Child Medicaid Enrollees)	-39.056 ***	7.061	
OVERKID (Children with data in both 1989 and 1992)	0.001	0.051	1.001
1992 Year Dummy	0.168 *	0.077	1.182
(1/P02A) * 1992 Year Dummy	3.366	9.348	
-2 LOG L	24,098.28		
Chi-Square Statistic	3,662.81		
P Value	0.000		
N	20,581		

*** p < .001; ** p < .01; * p < .05

Excluded categories: Ages 1 - 2 years, White, Male, Rural, AFDC, and 1989.

Appendix I

Number of EPSDT Screening Visits Among Users:
Pooled Linear Regression Models

APPENDIX TABLE I-1

ORDINARY LEAST SQUARES RESULTS: EPSDT SCREENING VISITS, USERS UNDER 3 YEARS OF AGE ONLY

POOLED MODEL INCLUDING INTERACTION TERM AND THE YEAR DUMMY VARIABLE FOR YEAR - CALIFORNIA

Dependent Variable: WELL		
Regressor *(X)*	Coefficient	Standard Error
Intercept	0.033	0.056
EP_AG1 (Age < 12 months)	0.568 ***	0.009
BLACK (Black Race)	-0.087 ***	0.012
OTHER (Other Race)	0.143 ***	0.014
UNKNOWN (Unknown Race)	0.143 ***	0.021
HISPANIC (Hispanic Ethnicity)	-0.163 ***	0.013
FEMALE (Sex)	0.014 *	0.007
URBAN (Urban Residence)	0.137 **	0.050
SUBURBAN (Surburban Residence)	0.060	0.049
UNIF1 (Blind/Disabled)	-0.302 ***	0.058
UNIF3 (Foster Care)	0.025	0.022
UNIF4 (Poverty-Related)	0.247 ***	0.015
UNIF5 (Medically Needy)	0.112 ***	0.009
ADJNOMO12 (Months Enrolled in Medicaid)	0.143 ***	0.001
SHORTAGE (Shortage Area)	-0.105 ***	0.010
CLINCP1K (Participating Clinics per 1,000 Population)	0.025	0.093
OVERKID (Service use in '89 and '92)	0.007	0.013
1/P02A (Participating Primary Care Providers/Child Medicaid Enrollees)	12.065 ***	2.651
1992 Year Dummy	0.097 ***	0.021
(1/P02A) * 1992 Year Dummy	10.276 **	3.963
F Statistic	654.14	
P Value	0.000	
N	70,101	
R^2	0.151	

*** p < .001; ** p < .01; * p < .05

Excluded categories: Ages 1 - 2 years, White, Male, Rural, AFDC, and 1989.

APPENDIX TABLE I-2

ORDINARY LEAST SQUARES RESULTS: EPSDT SCREENING VISITS, USERS UNDER 3 YEARS OF AGE ONLY

POOLED MODEL INCLUDING INTERACTION TERM AND THE YEAR DUMMY VARIABLE FOR YEAR - GEORGIA

Dependent Variable: WELL		
Regressor *(X)*	Coefficient	Standard Error
Intercept	-0.195 **	0.070
EP_AG1 (Age < 12 months)	0.651 ***	0.023
BLACK (Black Race)	0.217 ***	0.021
OTHER (Other Race)	0.111	0.117
UNKNOWN (Unknown Race)	0.139	0.124
HISPANIC (Hispanic Ethnicity)	-0.188	0.132
FEMALE (Sex)	0.014	0.018
URBAN (Urban Residence)	-0.086 **	0.028
SUBURBAN (Surburban Residence)	-0.264 ***	0.026
UNIF1 (Blind/Disabled)	-0.153	0.121
UNIF3 (Foster Care)	-0.043	0.088
UNIF4 (Poverty-Related)	0.146 ***	0.022
UNIF5 (Medically Needy)	0.037	0.030
ADJNOMO12 (Months Enrolled in Medicaid)	0.105 ***	0.004
SHORTAGE (Shortage Area)	-0.001	0.018
CLINCP1K (Participating Clinics per 1,000 Population)	1.595 ***	0.173
OVERKID (Service use in '89 and '92)	-0.040	0.044
1/P02A (Participating Primary Care Providers/Child Medicaid Enrollees)	-4.893	4.293
1992 Year Dummy	0.190 ***	0.058
(1/P02A) * 1992 Year Dummy	-3.226	5.344
F Statistic	90.60	
P Value	0.000	
N	17,035	
R^2	0.092	

*** p < .001; ** p < .01; * p < .05

Excluded categories: Ages 1 - 2 years, White, Male, Rural, AFDC, and 1989.

APPENDIX TABLE I-3

ORDINARY LEAST SQUARES RESULTS: EPSDT SCREENING VISITS, USERS UNDER 3 YEARS OF AGE ONLY

POOLED MODEL INCLUDING INTERACTION TERM AND THE YEAR DUMMY VARIABLE FOR YEAR - MICHIGAN

Dependent Variable: WELL		
Regressor *(X)*	Coefficient	Standard Error
Intercept	-0.066	0.092
EP_AG1 (Age < 12 months)	0.688 ***	0.034
BLACK (Black Race)	-0.208 ***	0.035
OTHER (Other Race)	-0.015	0.112
UNKNOWN (Unknown Race)	-0.278	0.174
HISPANIC (Hispanic Ethnicity)	-0.175	0.127
FEMALE (Sex)	-0.003	0.027
URBAN (Urban Residence)	0.031	0.045
SUBURBAN (Surburban Residence)	-0.100 *	0.050
UNIF1 (Blind/Disabled)	0.336	0.225
UNIF4 (Poverty-Related)	0.300 ***	0.038
UNIF5 (Medically Needy)	-0.004	0.044
ADJNOMO12 (Months Enrolled in Medicaid)	0.106 ***	0.005
MOS_PCCM (Months enrolled in a PCCM program)	-0.006	0.007
SHORTAGE (Shortage Area)	0.042	0.030
CLINCP1K (Participating Clinics per 1,000 Population)	-0.144	0.130
OVERKID (Service use in '89 and '92)	-0.105 ***	0.046
1/P02A (Participating Primary Care Providers/Child Medicaid Enrollees)	1.959	3.985
1992 Year Dummy	1.092 ***	0.065
(1/P02A) * 1992 Year Dummy	11.946 **	4.597
F Statistic	175.65	
P Value	0.000	
N	7,832	
R^2	0.299	

*** p < .001; ** p < .01; * p < .05

Excluded categories: Ages 1 - 2 years, White, Male, Rural, AFDC/Foster Care, and 1989.

APPENDIX TABLE I-4

ORDINARY LEAST SQUARES RESULTS: EPSDT SCREENING VISITS, USERS UNDER 3 YEARS OF AGE ONLY

POOLED MODEL INCLUDING INTERACTION TERM AND THE YEAR DUMMY VARIABLE FOR YEAR - TENNESSEE

Dependent Variable: WELL		
Regressor *(X)*	Coefficient	Standard Error
Intercept	0.352 ***	0.082
EP_AG1 (Age < 12 months)	0.906 ***	0.030
BLACK (Black Race)	-0.291 ***	0.028
OTHER (Other Race)	0.022	0.163
UNKNOWN (Unknown Race)	0.080	0.195
HISPANIC (Hispanic Ethnicity)	-0.142	0.227
FEMALE (Sex)	-0.035	0.023
URBAN (Urban Residence)	-0.262 ***	0.040
SUBURBAN (Surburban Residence)	0.001	0.039
UNIF1 (Blind/Disabled)	-0.510 ***	0.154
UNIF3 (Foster Care)	-0.017	0.128
UNIF4 (Poverty-Related)	0.246 ***	0.027
UNIF5 (Medically Needy)	0.058	0.048
ADJNOMO12 (Months Enrolled in Medicaid)	0.137 ***	0.004
MOS_PCCM (Months enrolled in a PCCM program)	0.003	0.020
SHORTAGE (Shortage Area)	-0.091 **	0.032
CLINCP1K (Participating Clinics per 1,000 Population)	-0.501 ***	0.077
OVERKID (Service use in '89 and '92)	0.010	0.041
1/P02A (Participating Primary Care Providers/Child Medicaid Enrollees)	5.730	5.733
1992 Year Dummy	-0.177 **	0.061
(1/P02A) * 1992 Year Dummy	23.618 ***	7.242
F Statistic	89.37	
P Value	0.000	
N	12,275	
R^2	0.127	

*** p < .001; ** p < .01; * p < .05

Excluded categories: Ages 1 - 2 years, White, Male, Rural, AFDC, and 1989.

Appendix J

Probability of Receiving Age-Appropriate Immunizations:
Pooled Logistic Regression Models

APPENDIX TABLE J-1

LOGISTIC REGRESSION RESULTS: PROBABILITY OF RECEIVING AGE-APPROPRIATE IMMUNIZATIONS, CHILDREN UNDER 3 YEARS OF AGE ONLY

POOLED MODEL INCLUDING INTERACTION TERM AND DUMMY VARIABLE FOR YEAR - CALIFORNIA

Dependent Variable: AR_IMM			
Regressor *(X)*	Coefficient	Standard Error	Odds Ratio
Intercept	-3.361 ***	0.096	
EP_AG1 (Age < 12 months)	1.482 ***	0.017	4.403
BLACK (Black Race)	-0.144 ***	0.021	0.866
OTHER (Other Race)	0.157 ***	0.025	1.170
UNKNOWN (Unknown Race)	-0.181 ***	0.032	0.835
HISPANIC (Hispanic Ethnicity)	-0.219 ***	0.024	0.804
FEMALE (Sex)	0.022	0.012	1.022
URBAN (Urban Residence)	0.219 **	0.085	1.245
SUBURBAN (Surburban Residence)	0.154	0.084	1.166
UNIF1 (Blind/Disabled)	-0.503 ***	0.094	0.605
UNIF3 (Foster Care)	0.059	0.040	1.061
UNIF4 (Poverty-Related)	0.330 ***	0.026	1.392
UNIF5 (Medically Needy)	-0.025	0.015	0.975
ADJNOMO12 (Months Enrolled in Medicaid)	0.286 ***	0.002	
SHORTAGE (Shortage Area)	-0.165 ***	0.018	0.848
CLINCP1K (Participating Clinics per 1,000 Population)	0.671 ***	0.163	
1/P02A (Participating Primary Care Providers/Child Medicaid Enrollees)	17.051 ***	4.578	
OVERKID (Children with data in both 1989 and 1992)	0.199 ***	0.020	1.220
1992 Year Dummy	0.176 ***	0.036	1.192
(1/P02A) * 1992 Year Dummy	20.722 **	6.995	
-2 LOG L		158,355.96	
Chi-Square Statistic		27,018.54	
P Value		0.000	
N		134,792	

*** p < .001; ** p < .01; * p < .05

Excluded categories: Ages 1 - 2 years, White, Male, Rural, AFDC, and 1989.

APPENDIX TABLE J-2

LOGISTIC REGRESSION RESULTS: PROBABILITY OF RECEIVING AGE-APPROPRIATE IMMUNIZATIONS, CHILDREN UNDER 3 YEARS OF AGE ONLY

POOLED MODEL INCLUDING INTERACTION TERM AND DUMMY VARIABLE FOR YEAR - GEORGIA

Dependent Variable: AR_IMM			
Regressor *(X)*	Coefficient	Standard Error	Odds Ratio
Intercept	-2.917 ***	0.099	
EP_AG1 (Age < 12 months)	1.677 ***	0.039	5.348
BLACK (Black Race)	0.014	0.032	1.014
OTHER (Other Race)	-0.007	0.168	0.993
UNKNOWN (Unknown Race)	-0.183	0.182	0.833
HISPANIC (Hispanic Ethnicity)	-0.173	0.190	0.841
FEMALE (Sex)	0.017	0.027	1.018
URBAN (Urban Residence)	-0.487 ***	0.044	0.615
SUBURBAN (Surburban Residence)	-0.212 ***	0.043	0.809
UNIF1 (Blind/Disabled)	-0.537 ***	0.165	0.584
UNIF3 (Foster Care)	-0.026	0.138	0.974
UNIF4 (Poverty-Related)	0.162 ***	0.035	1.176
UNIF5 (Medically Needy)	-0.213 ***	0.045	0.808
ADJNOMO12 (Months Enrolled in Medicaid)	0.303 ***	0.005	
SHORTAGE (Shortage Area)	-0.077 **	0.028	0.926
CLINCP1K (Participating Clinics per 1,000 Population)	-0.068	0.284	
1/P02A (Participating Primary Care Providers/Child Medicaid Enrollees)	-19.300 ***	5.658	
OVERKID (Children with data in both 1989 and 1992)	0.058	0.057	1.060
1992 Year Dummy	0.193 *	0.081	1.213
(1/P02A) * 1992 Year Dummy	27.628 ***	7.678	
-2 LOG L	32,052.53		
Chi-Square Statistic	5,633.41		
P Value	0.000		
N	27,192		

*** p < .001; ** p < .01; * p < .05

Excluded categories: Ages 1 - 2 years, White, Male, Rural, AFDC, and 1989.

APPENDIX TABLE J-3

LOGISTIC REGRESSION RESULTS: PROBABILITY OF RECEIVING AGE-APPROPRIATE IMMUNIZATIONS, CHILDREN UNDER 3 YEARS OF AGE ONLY

POOLED MODEL INCLUDING INTERACTION TERM AND DUMMY VARIABLE FOR YEAR - MICHIGAN

Dependent Variable: AR_IMM			
Regressor *(X)*	Coefficient	Standard Error	Odds Ratio
Intercept	-3.470 ***	0.087	
EP_AG1 (Age < 12 months)	1.427 ***	0.034	4.166
BLACK (Black Race)	0.038	0.030	1.039
OTHER (Other Race)	-0.314 **	0.114	0.730
UNKNOWN (Unknown Race)	-0.429 **	0.155	0.651
HISPANIC (Hispanic Ethnicity)	0.212	0.128	1.236
FEMALE (Sex)	0.013	0.025	1.013
URBAN (Urban Residence)	0.059	0.050	1.061
SUBURBAN (Surburban Residence)	0.141 **	0.054	1.152
UNIF1 (Blind/Disabled)	-0.511 **	0.172	0.600
UNIF4 (Poverty-Related)	0.182 ***	0.035	1.199
UNIF5 (Medically Needy)	0.042	0.039	1.043
ADJNOMO12 (Months Enrolled in Medicaid)	0.274 ***	0.005	
MOS_PCCM (Months Enrolled in a PCCM Program)	0.003	0.005	
SHORTAGE (Shortage Area)	-0.003	0.031	0.997
CLINCP1K (Participating Clinics per 1,000 Population)	0.327 *	0.141	
1/P02A (Participating Primary Care Providers/Child Medicaid Enrollees)	-0.861	3.206	
OVERKID (Children with data in both 1989 and 1992)	0.026	0.038	1.026
1992 Year Dummy	0.359 ***	0.052	1.431
(1/P02A) * 1992 Year Dummy	-3.704	3.780	
-2 LOG L	37,973.92		
Chi-Square Statistic	5,297.06		
P Value	0.000		
N	31,810		

*** p < .001; ** p < .01; * p < .05

Excluded categories: Ages 1 - 2 years, White, Male, Rural, AFDC/Foster Care, and 1989.

APPENDIX TABLE J-4

LOGISTIC REGRESSION RESULTS: PROBABILITY OF RECEIVING AGE-APPROPRIATE IMMUNIZATIONS, CHILDREN UNDER 3 YEARS OF AGE ONLY

POOLED MODEL INCLUDING INTERACTION TERM AND DUMMY VARIABLE FOR YEAR - TENNESSEE

Dependent Variable: AR_IMM			
Regressor *(X)*	Coefficient	Standard Error	Odds Ratio
Intercept	-2.522 ***	0.104	
EP_AG1 (Age < 12 months)	1.524 ***	0.044	4.591
BLACK (Black Race)	-0.026	0.038	0.974
OTHER (Other Race)	-0.124	0.212	0.883
UNKNOWN (Unknown Race)	0.170	0.266	1.186
HISPANIC (Hispanic Ethnicity)	0.175	0.297	1.191
FEMALE (Sex)	0.046	0.031	1.047
URBAN (Urban Residence)	-0.311 ***	0.054	0.733
SUBURBAN (Surburban Residence)	-0.116 *	0.054	0.891
UNIF1 (Blind/Disabled)	-1.315 ***	0.207	0.268
UNIF3 (Foster Care)	-0.336 *	0.163	0.714
UNIF4 (Poverty-Related)	0.298 ***	0.036	1.348
UNIF5 (Medically Needy)	-0.042	0.062	0.959
ADJNOMO12 (Months Enrolled in Medicaid)	0.295 ***	0.006	
MOS_PCCM (Months Enrolled in a PCCM Program)	-0.093 ***	0.026	
SHORTAGE (Shortage Area)	-0.101 *	0.043	0.904
CLINCP1K (Participating Clinics per 1,000 Population)	-0.420 ***	0.108	
1/P02A (Participating Primary Care Providers/Child Medicaid Enrollees)	-55.098 ***	7.202	
OVERKID (Children with data in both 1989 and 1992)	-0.122 *	0.052	0.885
1992 Year Dummy	0.105	0.078	1.111
(1/P02A) * 1992 Year Dummy	6.467	9.368	
-2 LOG L	24,345.51		
Chi-Square Statistic	4,185.17		
P Value	0.000		
N	20,581		

*** $p < .001$; ** $p < .01$; * $p < .05$

Excluded categories: Ages 1 - 2 years, White, Male, Rural, AFDC, and 1989.

Appendix K

Number of Age-Appropriate Immunizations Among Users:
Pooled Linear Regression Models

APPENDIX TABLE K-1

ORDINARY LEAST SQUARES RESULTS: AGE-APPROPRIATE IMMUNIZATIONS, USERS UNDER 3 YEARS OF AGE ONLY

POOLED MODEL INCLUDING INTERACTION TERM AND THE YEAR DUMMY VARIABLE FOR YEAR - CALIFORNIA

Dependent Variable: AGIMMUN		
Regressor *(X)*	Coefficient	Standard Error
Intercept	-0.053	0.095
EP_AG1 (Age < 12 months)	1.994 ***	0.015
BLACK (Black Race)	-0.067 ***	0.020
OTHER (Other Race)	0.149 ***	0.023
UNKNOWN (Unknown Race)	-0.101 **	0.035
HISPANIC (Hispanic Ethnicity)	-0.243 ***	0.022
FEMALE (Sex)	0.005	0.012
URBAN (Urban Residence)	0.036	0.085
SUBURBAN (Surburban Residence)	-0.031	0.084
UNIF1 (Blind/Disabled)	-0.255 **	0.104
UNIF3 (Foster Care)	-0.070	0.039
UNIF4 (Poverty-Related)	0.287 ***	0.026
UNIF5 (Medically Needy)	0.107 ***	0.015
ADJNOMO12 (Months Enrolled in Medicaid)	0.216 ***	0.002
SHORTAGE (Shortage Area)	-0.099 ***	0.017
CLINCP1K (Participating Clinics per 1,000 Population)	0.201	0.160
OVERKID (Service use in '89 and '92)	0.003	0.021
1/P02A (Participating Primary Care Providers/Child Medicaid Enrollees)	-0.616	4.585
1992 Year Dummy	1.102 ***	0.036
(1/P02A) * 1992 Year Dummy	24.262 ***	6.760
F Statistic	1522.10	
P Value	0.000	
N	60,324	
R^2	0.324	

*** $p < .001$; ** $p < .01$; * $p < .05$

Excluded categories: Ages 1 - 2 years, White, Male, Rural, AFDC, and 1989.

APPENDIX TABLE K-2

ORDINARY LEAST SQUARES RESULTS: AGE-APPROPRIATE IMMUNIZATIONS, USERS UNDER 3 YEARS OF AGE ONLY

POOLED MODEL INCLUDING INTERACTION TERM AND THE YEAR DUMMY VARIABLE FOR YEAR - GEORGIA

Dependent Variable: AGIMMUN		
Regressor *(X)*	Coefficient	Standard Error
Intercept	-0.165	0.104
EP_AG1 (Age < 12 months)	2.163 ***	0.033
BLACK (Black Race)	-0.057	0.031
OTHER (Other Race)	0.358 **	0.169
UNKNOWN (Unknown Race)	-0.420 **	0.193
HISPANIC (Hispanic Ethnicity)	-0.289	0.192
FEMALE (Sex)	-0.034	0.026
URBAN (Urban Residence)	-0.168 ***	0.041
SUBURBAN (Surburban Residence)	-0.051	0.039
UNIF1 (Blind/Disabled)	-0.140	0.183
UNIF3 (Foster Care)	-0.312 **	0.135
UNIF4 (Poverty-Related)	0.137 ***	0.032
UNIF5 (Medically Needy)	-0.139 **	0.045
ADJNOMO12 (Months Enrolled in Medicaid)	0.241 ***	0.006
SHORTAGE (Shortage Area)	-0.105 ***	0.027
CLINCP1K (Participating Clinics per 1,000 Population)	0.096	0.266
OVERKID (Service use in '89 and '92)	-0.051	0.063
1/P02A (Participating Primary Care Providers/Child Medicaid Enrollees)	-3.268	6.309
1992 Year Dummy	1.362 ***	0.085
(1/P02A) * 1992 Year Dummy	9.681	7.849
F Statistic	411.64	
P Value	0.000	
N	13,859	
R^2	0.361	

*** p < .001; ** p < .01; * p < .05

Excluded categories: Ages 1 - 2 years, White, Male, Rural, AFDC, and 1989.

APPENDIX TABLE K-3

ORDINARY LEAST SQUARES RESULTS: AGE-APPROPRIATE IMMUNIZATIONS, USERS UNDER 3 YEARS OF AGE ONLY

POOLED MODEL INCLUDING INTERACTION TERM AND THE YEAR DUMMY VARIABLE FOR YEAR - MICHIGAN

Dependent Variable: AGIMMUN		
Regressor *(X)*	Coefficient	Standard Error
Intercept	-0.268 **	0.096
EP_AG1 (Age < 12 months)	1.985 ***	0.033
BLACK (Black Race)	-0.052	0.032
OTHER (Other Race)	0.091	0.131
UNKNOWN (Unknown Race)	0.069	0.185
HISPANIC (Hispanic Ethnicity)	-0.115	0.147
FEMALE (Sex)	0.002	0.027
URBAN (Urban Residence)	0.134 **	0.054
SUBURBAN (Surburban Residence)	0.126 *	0.058
UNIF1 (Blind/Disabled)	-0.429 *	0.203
UNIF4 (Poverty-Related)	0.177 ***	0.037
UNIF5 (Medically Needy)	-0.019	0.043
ADJNOMO12 (Months Enrolled in Medicaid)	0.216 ***	0.005
MOS_PCCM (Months enrolled in a PCCM program)	-0.009	0.005
SHORTAGE (Shortage Area)	-0.062	0.033
CLINCP1K (Participating Clinics per 1,000 Population)	0.248	0.151
OVERKID (Service use in '89 and '92)	-0.079	0.044
1/P02A (Participating Primary Care Providers/Child Medicaid Enrollees)	-2.954	3.373
1992 Year Dummy	1.005 ***	0.056
(1/P02A) * 1992 Year Dummy	4.323	3.939
F Statistic	300.64	
P Value	0.000	
N	13,346	
R^2	0.300	

*** p < .001; ** p < .01; * p < .05

Excluded categories: Ages 1 - 2 years, White, Male, Rural, AFDC/Foster Care, and 1989.

APPENDIX TABLE K-4

ORDINARY LEAST SQUARES RESULTS: AGE-APPROPRIATE IMMUNIZATIONS, USERS UNDER 3 YEARS OF AGE ONLY

POOLED MODEL INCLUDING INTERACTION TERM AND THE YEAR DUMMY VARIABLE FOR YEAR - TENNESSEE

Dependent Variable: AGIMMUN		
Regressor *(X)*	Coefficient	Standard Error
Intercept	-0.281 **	0.112
EP_AG1 (Age < 12 months)	2.321 ***	0.039
BLACK (Black Race)	-0.074 *	0.038
OTHER (Other Race)	0.147	0.229
UNKNOWN (Unknown Race)	0.212	0.289
HISPANIC (Hispanic Ethnicity)	-0.628 *	0.315
FEMALE (Sex)	-0.033	0.031
URBAN (Urban Residence)	-0.160 **	0.052
SUBURBAN (Surburban Residence)	0.016	0.051
UNIF1 (Blind/Disabled)	-0.519 *	0.270
UNIF3 (Foster Care)	-0.033	0.176
UNIF4 (Poverty-Related)	0.187 ***	0.036
UNIF5 (Medically Needy)	-0.070	0.065
ADJNOMO12 (Months Enrolled in Medicaid)	0.256 ***	0.006
MOS_PCCM (Months enrolled in a PCCM program)	-0.025	0.032
SHORTAGE (Shortage Area)	-0.004	0.042
CLINCP1K (Participating Clinics per 1,000 Population)	0.010	0.104
OVERKID (Service use in '89 and '92)	-0.064	0.056
1/P02A (Participating Primary Care Providers/Child Medicaid Enrollees)	-2.976	7.886
1992 Year Dummy	1.229 ***	0.082
(1/P02A) * 1992 Year Dummy	-6.159	9.923
F Statistic	278.84	
P Value	0.000	
N	10,233	
R^2	0.353	

*** p < .001; ** p < .01; * p < .05

Excluded categories: Ages 1 - 2 years, White, Male, Rural, AFDC, and 1989.

Appendix L

Probability of Receiving Diagnostic and Treatment Visits:
Pooled Logistic Regression Models

APPENDIX TABLE L-1

LOGISTIC REGRESSION RESULTS: PROBABILITY OF RECEIVING DIAGNOSTIC AND TREATMENT VISITS, CHILDREN UNDER 21 YEARS OF AGE

POOLED MODEL INCLUDING INTERACTION TERM AND DUMMY VARIABLE FOR YEAR - CALIFORNIA

Dependent Variable: DXTXVIS			
Regressor *(X)*	Coefficient	Standard Error	Odds Ratio
Intercept	-1.323 ***	0.045	
EP_AG1 (Age < 12 months)	0.315 ***	0.013	1.370
EP_AG2 (Age = 1 - 2 years)	0.334 ***	0.011	1.397
EP_AG3 (Age = 3 - 6 years)	-0.174 ***	0.009	0.840
EP_AG4 (Age = 7 - 12 years)	-0.340 ***	0.009	0.712
BLACK (Black Race)	-0.414 ***	0.011	0.661
OTHER (Other Race)	0.092 ***	0.012	1.096
UNKNOWN (Unknown Race)	0.160 ***	0.018	1.174
HISPANIC (Hispanic Ethnicity)	-0.261 ***	0.012	0.771
FEMALE (Sex)	0.125 ***	0.006	1.133
URBAN (Urban Residence)	-0.074	0.041	0.929
SUBURBAN (Surburban Residence)	-0.001	0.040	0.999
UNIF1 (Blind/Disabled)	0.138 ***	0.025	1.148
UNIF3 (Foster Care)	-0.018	0.018	0.983
UNIF4 (Poverty-Related)	-0.028	0.020	0.972
UNIF5 (Medically Needy)	-0.191 ***	0.008	0.826
ADJNOMO12 (Months Enrolled in Medicaid)	0.202 ***	0.001	
PARTIC (User of Preventive Care Visits)	1.279 ***	0.009	3.592
SHORTAGE (Shortage Area)	0.059 ***	0.009	1.060
CLINCP1K (Participating Clinics per 1,000 Population)	0.158 *	0.081	
1/P02A (Participating Primary Care Providers/Child Medicaid Enrollees)	19.434 ***	2.335	
OVERKID (Children with data in both 1989 and 1992)	0.232 ***	0.007	1.261
1992 Year Dummy	-0.199 ***	0.017	0.820
(1/P02A) * 1992 Year Dummy	4.296	3.596	
-2 LOG L	600,201.05		
Chi-Square Statistic	131,217.98		
P Value	0.000		
N	555,791		

*** p < .001; ** p < .01; * p < .05

Excluded categories: Ages 13+ years, White, Male, Rural, AFDC, and 1989.

APPENDIX TABLE L-2

LOGISTIC REGRESSION RESULTS: PROBABILITY OF RECEIVING DIAGNOSTIC AND TREATMENT VISITS, CHILDREN UNDER 21 YEARS OF AGE

POOLED MODEL INCLUDING INTERACTION TERM AND DUMMY VARIABLE FOR YEAR - GEORGIA

Dependent Variable: DXTXVIS			
Regressor *(X)*	Coefficient	Standard Error	Odds Ratio
Intercept	-0.921 ***	0.044	
EP_AG1 (Age < 12 months)	1.287 ***	0.033	3.623
EP_AG2 (Age = 1 - 2 years)	0.627 ***	0.026	1.871
EP_AG3 (Age = 3 - 6 years)	-0.114 ***	0.021	0.892
EP_AG4 (Age = 7 - 12 years)	-0.399 ***	0.020	0.671
BLACK (Black Race)	-0.597 ***	0.018	0.550
OTHER (Other Race)	-0.279 **	0.095	0.756
UNKNOWN (Unknown Race)	-0.246 **	0.096	0.782
HISPANIC (Hispanic Ethnicity)	-0.367 ***	0.113	0.693
FEMALE (Sex)	0.135 ***	0.015	1.144
URBAN (Urban Residence)	-0.327 ***	0.024	0.721
SUBURBAN (Surburban Residence)	-0.053 *	0.024	0.948
UNIF1 (Blind/Disabled)	0.200 ***	0.042	1.222
UNIF3 (Foster Care)	0.352 ***	0.059	1.422
UNIF4 (Poverty-Related)	0.329 ***	0.023	1.389
UNIF5 (Medically Needy)	0.061 **	0.024	1.063
ADJNOMO12 (Months Enrolled in Medicaid)	0.232 ***	0.002	
PARTIC (User of Preventive Care Visits)	0.717 ***	0.020	2.048
SHORTAGE (Shortage Area)	-0.141 ***	0.015	0.869
CLINCP1K (Participating Clinics per 1,000 Population)	0.752 ***	0.165	
1/P02A (Participating Primary Care Providers/Child Medicaid Enrollees)	-22.553 ***	2.842	
OVERKID (Children with data in both 1989 and 1992)	0.039 *	0.017	1.039
1992 Year Dummy	-0.059	0.035	0.943
(1/P02A) * 1992 Year Dummy	8.236 *	4.166	
-2 LOG L	111,290.67		
Chi-Square Statistic	20,648.23		
P Value	0.000		
N	104,540		

*** p < .001; ** p < .01; * p < .05

Excluded categories: Ages 13+ years, White, Male, Rural, AFDC, and 1989.

APPENDIX TABLE L-3

LOGISTIC REGRESSION RESULTS: PROBABILITY OF RECEIVING DIAGNOSTIC AND TREATMENT VISITS, CHILDREN UNDER 21 YEARS OF AGE

POOLED MODEL INCLUDING INTERACTION TERM AND DUMMY VARIABLE FOR YEAR - MICHIGAN

Dependent Variable: DXTXVIS			
Regressor *(X)*	Coefficient	Standard Error	Odds Ratio
Intercept	-1.233 ***	0.040	
EP_AG1 (Age < 12 months)	1.826 ***	0.032	6.209
EP_AG2 (Age = 1 - 2 years)	0.618 ***	0.024	1.855
EP_AG3 (Age = 3 - 6 years)	-0.060 **	0.019	0.941
EP_AG4 (Age = 7 - 12 years)	-0.337 ***	0.017	0.714
BLACK (Black Race)	-0.407 ***	0.016	0.666
OTHER (Other Race)	-0.660 ***	0.050	0.517
UNKNOWN (Unknown Race)	-0.445 ***	0.067	0.641
HISPANIC (Hispanic Ethnicity)	0.421 ***	0.058	1.523
FEMALE (Sex)	0.191 ***	0.013	1.210
URBAN (Urban Residence)	-0.172 ***	0.026	0.842
SUBURBAN (Surburban Residence)	-0.026	0.028	0.974
UNIF1 (Blind/Disabled)	0.106 **	0.040	1.112
UNIF4 (Poverty-Related)	0.139 ***	0.027	1.149
UNIF5 (Medically Needy)	-0.001	0.017	0.999
ADJNOMO12 (Months Enrolled in Medicaid)	0.220 ***	0.002	
MOS_PCCM (Months Enrolled in a PCCM Program)	0.017 ***	0.002	
PARTIC (User of Preventive Care Visits)	0.652 ***	0.017	1.920
SHORTAGE (Shortage Area)	-0.011	0.017	0.990
CLINCP1K (Participating Clinics per 1,000 Population)	-0.079	0.071	
1/P02A (Participating Primary Care Providers/Child Medicaid Enrollees)	-0.661	1.663	
OVERKID (Children with data in both 1989 and 1992)	0.137 ***	0.014	1.147
1992 Year Dummy	0.001	0.025	1.001
(1/P02A) * 1992 Year Dummy	0.550	2.029	
-2 LOG L	140,005.13		
Chi-Square Statistic	25,981.31		
P Value	0.000		
N	135,230		

*** p < .001; ** p < .01; * p < .05

Excluded categories: Ages 13+ years, White, Male, Rural, AFDC/Foster Care, and 1989.

APPENDIX TABLE L-4

LOGISTIC REGRESSION RESULTS: PROBABILITY OF RECEIVING DIAGNOSTIC AND TREATMENT VISITS, CHILDREN UNDER 21 YEARS OF AGE

POOLED MODEL INCLUDING INTERACTION TERM AND DUMMY VARIABLE FOR YEAR - TENNESSEE

Dependent Variable: DXTXVIS			
Regressor *(X)*	Coefficient	Standard Error	Odds Ratio
Intercept	-1.233 ***	0.050	
EP_AG1 (Age < 12 months)	0.850 ***	0.037	2.339
EP_AG2 (Age = 1 - 2 years)	0.391 ***	0.031	1.479
EP_AG3 (Age = 3 - 6 years)	-0.157 ***	0.025	0.855
EP_AG4 (Age = 7 - 12 years)	-0.277 ***	0.023	0.758
BLACK (Black Race)	-0.632 ***	0.020	0.532
OTHER (Other Race)	-1.022 ***	0.117	0.360
UNKNOWN (Unknown Race)	-0.071	0.116	0.932
HISPANIC (Hispanic Ethnicity)	0.522 ***	0.159	1.685
FEMALE (Sex)	0.203 ***	0.017	1.225
URBAN (Urban Residence)	-0.332 ***	0.030	0.717
SUBURBAN (Surburban Residence)	0.026	0.030	1.026
UNIF1 (Blind/Disabled)	-0.412 ***	0.043	0.662
UNIF3 (Foster Care)	-0.003	0.066	0.997
UNIF4 (Poverty-Related)	-0.025	0.024	0.976
UNIF5 (Medically Needy)	-0.044	0.023	0.957
ADJNOMO12 (Months Enrolled in Medicaid)	0.230 ***	0.003	
MOS_PCCM (Months Enrolled in a PCCM Program)	-0.031 ***	0.008	
PARTIC (User of Preventive Care Visits)	0.885 ***	0.025	2.423
SHORTAGE (Shortage Area)	0.055 *	0.024	1.056
CLINCP1K (Participating Clinics per 1,000 Population)	-0.021	0.060	
1/P02A (Participating Primary Care Providers/Child Medicaid Enrollees)	24.130 ***	3.799	
OVERKID (Children with data in both 1989 and 1992)	0.188 ***	0.019	1.207
1992 Year Dummy	0.165 ***	0.038	1.179
(1/P02A) * 1992 Year Dummy	-10.419 *	5.091	
-2 LOG L	85,261.73		
Chi-Square Statistic	17,809.51		
P Value	0.000		
N	83,999		

*** p < .001; ** p < .01; * p < .05

Excluded categories: Ages 13+ years, White, Male, Rural, AFDC, and 1989.

Appendix M

Number of Diagnostic and Treatment Visits Among Users:
Pooled Linear Regression Models

APPENDIX TABLE M-1

ORDINARY LEAST SQUARES RESULTS: DIAGNOSTIC AND TREATMENT VISITS, ALL USERS UNDER 21 YEARS OF AGE

POOLED MODEL INCLUDING INTERACTION TERM AND THE YEAR DUMMY VARIABLE FOR YEAR - CALIFORNIA

Dependent Variable: DXTXV		
Regressor *(X)*	Coefficient	Standard Error
Intercept	-0.076	0.165
EP_AG1 (Age < 12 months)	1.603 ***	0.052
EP_AG2 (Age = 1 - 2 years)	1.681 ***	0.040
EP_AG3 (Age = 3 - 6 years)	-0.373 ***	0.035
EP_AG4 (Age = 7 - 12 years)	-0.888 ***	0.035
BLACK (Black Race)	-1.044 ***	0.039
OTHER (Other Race)	-0.625 ***	0.040
UNKNOWN (Unknown Race)	0.495 ***	0.073
HISPANIC (Hispanic Ethnicity)	0.028	0.040
FEMALE (Sex)	-0.119 ***	0.024
URBAN (Urban Residence)	0.385 **	0.145
SUBURBAN (Surburban Residence)	0.501 ***	0.143
UNIF1 (Blind/Disabled)	5.594 ***	0.088
UNIF3 (Foster Care)	2.734 ***	0.061
UNIF4 (Poverty-Related)	0.060	0.079
UNIF5 (Medically Needy)	0.249 ***	0.031
ADJNOMO12 (Months Enrolled in Medicaid)	0.410 ***	0.004
PARTIC (User of Preventive Care Visits)	0.933 ***	0.028
SHORTAGE (Shortage Area)	0.378 ***	0.033
CLINCP1K (Participating Clinics per 1,000 Population)	-1.218 ***	0.296
OVERKID (Service use in '89 and '92)	0.035	0.027
1/P02A (Participating Primary Care Providers/Child Medicaid Enrollees)	82.707 ***	8.398
1992 Year Dummy	0.052	0.061
(1/P02A) * 1992 Year Dummy	-22.085	13.110
F Statistic	1169.33	
P Value	0.000	
N	351,141	
R^2	0.071	

*** $p < .001$; ** $p < .01$; * $p < .05$

Excluded categories: Ages 13+ years, White, Male, Rural, AFDC, and 1989.

APPENDIX TABLE M-2

ORDINARY LEAST SQUARES RESULTS: DIAGNOSTIC AND TREATMENT VISITS, ALL USERS UNDER 21 YEARS OF AGE

POOLED MODEL INCLUDING INTERACTION TERM AND THE YEAR DUMMY VARIABLE FOR YEAR - GEORGIA

Dependent Variable: DXTXV		
Regressor *(X)*	Coefficient	Standard Error
Intercept	0.637 ***	0.147
EP_AG1 (Age < 12 months)	3.713 ***	0.093
EP_AG2 (Age = 1 - 2 years)	1.939 ***	0.074
EP_AG3 (Age = 3 - 6 years)	-0.509 ***	0.069
EP_AG4 (Age = 7 - 12 years)	-0.813 ***	0.070
BLACK (Black Race)	-1.663 ***	0.052
OTHER (Other Race)	-0.722 *	0.321
UNKNOWN (Unknown Race)	4.200 ***	0.255
HISPANIC (Hispanic Ethnicity)	-1.137 **	0.383
FEMALE (Sex)	-0.149 ***	0.046
URBAN (Urban Residence)	-0.134	0.070
SUBURBAN (Surburban Residence)	-0.163 *	0.068
UNIF1 (Blind/Disabled)	3.760 ***	0.124
UNIF3 (Foster Care)	2.654 ***	0.160
UNIF4 (Poverty-Related)	0.150 *	0.066
UNIF5 (Medically Needy)	0.315 ***	0.079
ADJNOMO12 (Months Enrolled in Medicaid)	0.465 ***	0.009
PARTIC (User of Preventive Care Visits)	0.529 ***	0.052
SHORTAGE (Shortage Area)	-0.081	0.047
CLINCP1K (Participating Clinics per 1,000 Population)	0.596	0.441
OVERKID (Service use in '89 and '92)	-0.147 **	0.054
1/P02A (Participating Primary Care Providers/Child Medicaid Enrollees)	-32.167 ***	9.393
1992 Year Dummy	0.596 ***	0.108
(1/P02A) * 1992 Year Dummy	46.641 ***	12.892
F Statistic	453.24	
P Value	0.000	
N	70,498	
R^2	0.129	

*** p < .001; ** p < .01; * p < .05

Excluded categories: Ages 13+ years, White, Male, Rural, AFDC, and 1989.

APPENDIX TABLE M-3

ORDINARY LEAST SQUARES RESULTS: DIAGNOSTIC AND TREATMENT VISITS, ALL USERS UNDER 21 YEARS OF AGE

POOLED MODEL INCLUDING INTERACTION TERM AND THE YEAR DUMMY VARIABLE FOR YEAR - MICHIGAN

Dependent Variable: DXTXV		
Regressor *(X)*	Coefficient	Standard Error
Intercept	0.251 *	0.119
EP_AG1 (Age < 12 months)	2.325 ***	0.075
EP_AG2 (Age = 1 - 2 years)	1.976 ***	0.061
EP_AG3 (Age = 3 - 6 years)	-0.715 ***	0.054
EP_AG4 (Age = 7 - 12 years)	-1.328 ***	0.053
BLACK (Black Race)	-0.932 ***	0.044
OTHER (Other Race)	-1.111 ***	0.157
UNKNOWN (Unknown Race)	-0.265	0.209
HISPANIC (Hispanic Ethnicity)	0.265	0.179
FEMALE (Sex)	0.116 **	0.036
URBAN (Urban Residence)	0.153 *	0.068
SUBURBAN (Surburban Residence)	0.299 ***	0.074
UNIF1 (Blind/Disabled)	3.725 ***	0.108
UNIF4 (Poverty-Related)	-0.099	0.070
UNIF5 (Medically Needy)	0.360 ***	0.049
ADJNOMO12 (Months Enrolled in Medicaid)	0.473 ***	0.007
MOS_PCCM (Months enrolled in a PCCM program)	-0.019 ***	0.006
PARTIC (User of Preventive Care Visits)	0.703 ***	0.042
SHORTAGE (Shortage Area)	-0.188 ***	0.045
CLINCP1K (Participating Clinics per 1,000 Population)	-0.137	0.191
OVERKID (Service use in '89 and '92)	0.008	0.039
1/P02A (Participating Primary Care Providers/Child Medicaid Enrollees)	9.581 *	4.606
1992 Year Dummy	0.178 **	0.068
(1/P02A) * 1992 Year Dummy	6.312	5.550
F Statistic	530.62	
P Value	0.000	
N	94,201	
R^2	0.115	

*** P < .001; ** p < .01; * p < .05

Excluded categories: Ages 13+ years, White, Male, Rural, AFDC/Foster Care, and 1989.

APPENDIX TABLE M-4

ORDINARY LEAST SQUARES RESULTS: DIAGNOSTIC AND TREATMENT VISITS, ALL USERS UNDER 21 YEARS OF AGE

POOLED MODEL INCLUDING INTERACTION TERM AND THE YEAR DUMMY VARIABLE FOR YEAR - TENNESSEE

Dependent Variable: DXTXV		
Regressor *(X)*	Coefficient	Standard Error
Intercept	0.710 ***	0.218
EP_AG1 (Age < 12 months)	3.464 ***	0.151
EP_AG2 (Age = 1 - 2 years)	1.878 ***	0.118
EP_AG3 (Age = 3 - 6 years)	-0.828 ***	0.104
EP_AG4 (Age = 7 - 12 years)	-1.102 ***	0.102
BLACK (Black Race)	-2.064 ***	0.081
OTHER (Other Race)	-1.400 *	0.606
UNKNOWN (Unknown Race)	3.061 ***	0.458
HISPANIC (Hispanic Ethnicity)	0.352	0.804
FEMALE (Sex)	-0.098	0.070
URBAN (Urban Residence)	-0.493 ***	0.116
SUBURBAN (Surburban Residence)	0.274 *	0.113
UNIF1 (Blind/Disabled)	2.320 ***	0.181
UNIF3 (Foster Care)	7.096 ***	0.252
UNIF4 (Poverty-Related)	-0.179 *	0.092
UNIF5 (Medically Needy)	0.195 *	0.101
ADJNOMO12 (Months Enrolled in Medicaid)	0.510 ***	0.012
MOS_PCCM (Months enrolled in a PCCM program)	-0.125 ***	0.037
PARTIC (User of Preventive Care Visits)	0.639 ***	0.084
SHORTAGE (Shortage Area)	0.163	0.091
CLINCP1K (Participating Clinics per 1,000 Population)	-0.349	0.237
OVERKID (Service use in '89 and '92)	0.000	0.077
1/P02A (Participating Primary Care Providers/Child Medicaid Enrollees)	42.635 **	15.532
1992 Year Dummy	-0.053	0.154
(1/P02A) * 1992 Year Dummy	128.068 ***	20.137
F Statistic	235.61	
P Value	0.000	
N	58,533	
R^2	0.088	

*** p < .001; ** p < .01; * p < .05

Excluded categories: Ages 13+ years, White, Male, Rural, AFDC, and 1989.

Appendix N

Probability of Receiving Prescription Drugs:
- Pooled Logistic Regression Models

APPENDIX TABLE N-1

LOGISTIC REGRESSION RESULTS: PROBABILITY OF RECEIVING PRESCRIPTION DRUGS, CHILDREN UNDER 21 YEARS OF AGE

POOLED MODEL INCLUDING INTERACTION TERM AND DUMMY VARIABLE FOR YEAR - CALIFORNIA

Dependent Variable: RX			
Regressor *(X)*	Coefficient	Standard Error	Odds Ratio
Intercept	-1.774 ***	0.044	
EP_AG1 (Age < 12 months)	0.367 ***	0.013	1.443
EP_AG2 (Age = 1 - 2 years)	0.590 ***	0.011	1.804
EP_AG3 (Age = 3 - 6 years)	0.056 ***	0.009	1.058
EP_AG4 (Age = 7 - 12 years)	-0.276 ***	0.008	0.758
BLACK (Black Race)	-0.375 ***	0.010	0.688
OTHER (Other Race)	0.283 ***	0.012	1.328
UNKNOWN (Unknown Race)	0.174 ***	0.019	1.190
HISPANIC (Hispanic Ethnicity)	-0.427 ***	0.011	0.652
FEMALE (Sex)	0.234 ***	0.006	1.263
URBAN (Urban Residence)	0.075 *	0.039	1.078
SUBURBAN (Surburban Residence)	0.076 *	0.038	1.079
UNIF1 (Blind/Disabled)	0.183 ***	0.024	1.201
UNIF3 (Foster Care)	-0.381 ***	0.017	0.683
UNIF4 (Poverty-Related)	-0.211 ***	0.020	0.810
UNIF5 (Medically Needy)	-0.364 ***	0.008	0.695
ADJNOMO12 (Months Enrolled in Medicaid)	0.196 ***	0.001	
PARTIC (User of Preventive Care Visits)	1.350 ***	0.008	3.858
SHORTAGE (Shortage Area)	0.015	0.009	1.015
CLINCP1K (Participating Clinics per 1,000 Population)	-0.400 ***	0.079	
1/P02A (Participating Primary Care Providers/Child Medicaid Enrollees)	-28.472 ***	2.264	
OVERKID (Children with data in both 1989 and 1992)	0.233 ***	0.007	1.263
1992 Year Dummy	-0.131 ***	0.016	0.877
(1/P02A) * 1992 Year Dummy	0.793	3.494	
-2 LOG L		615,273.39	
Chi-Square Statistic		150,936.98	
P Value		0.000	
N		555,791	

*** p < .001; ** p < .01; * p < .05

Excluded categories: Ages 13+ years, White, Male, Rural, AFDC, and 1989.

APPENDIX TABLE N-2

LOGISTIC REGRESSION RESULTS: PROBABILITY OF RECEIVING PRESCRIPTION DRUGS, CHILDREN UNDER 21 YEARS OF AGE

POOLED MODEL INCLUDING INTERACTION TERM AND DUMMY VARIABLE FOR YEAR - GEORGIA

Dependent Variable: RX				
Regressor *(X)*	Coefficient		Standard Error	Odds Ratio
Intercept	-0.764	***	0.042	
EP_AG1 (Age < 12 months)	0.429	***	0.030	1.536
EP_AG2 (Age = 1 - 2 years)	0.525	***	0.025	1.690
EP_AG3 (Age = 3 - 6 years)	-0.191	***	0.021	0.826
EP_AG4 (Age = 7 - 12 years)	-0.610	***	0.020	0.543
BLACK (Black Race)	-0.686	***	0.017	0.503
OTHER (Other Race)	-0.315	***	0.092	0.730
UNKNOWN (Unknown Race)	-0.507	***	0.090	0.602
HISPANIC (Hispanic Ethnicity)	-0.577	***	0.110	0.561
FEMALE (Sex)	0.254	***	0.014	1.290
URBAN (Urban Residence)	-0.446	***	0.023	0.640
SUBURBAN (Surburban Residence)	-0.067	***	0.023	0.935
UNIF1 (Blind/Disabled)	0.373	***	0.042	1.451
UNIF3 (Foster Care)	-0.124	*	0.052	0.883
UNIF4 (Poverty-Related)	0.312	***	0.022	1.366
UNIF5 (Medically Needy)	-0.050	*	0.024	0.951
ADJNOMO12 (Months Enrolled in Medicaid)	0.220	***	0.002	
PARTIC (User of Preventive Care Visits)	0.578	***	0.018	1.783
SHORTAGE (Shortage Area)	-0.177	***	0.015	0.838
CLINCP1K (Participating Clinics per 1,000 Population)	1.166	***	0.162	
1/P02A (Participating Primary Care Providers/Child Medicaid Enrollees)	-29.679	***	2.776	
OVERKID (Children with data in both 1989 and 1992)	0.005		0.016	1.005
1992 Year Dummy	-0.039		0.034	0.962
(1/P02A) * 1992 Year Dummy	3.235		4.018	
-2 LOG L			118,568.31	
Chi-Square Statistic			20,534.43	
P Value			0.000	
N			104,540	

*** p < .001; ** p < .01; *p < .05

Excluded categories: Ages 13+ years, White, Male, Rural, AFDC, and 1989.

APPENDIX TABLE N-3

LOGISTIC REGRESSION RESULTS: PROBABILITY OF RECEIVING PRESCRIPTION DRUGS, CHILDREN UNDER 21 YEARS OF AGE

POOLED MODEL INCLUDING INTERACTION TERM AND DUMMY VARIABLE FOR YEAR - MICHIGAN

Dependent Variable: RX			
Regressor *(X)*	Coefficient	Standard Error	Odds Ratio
Intercept	-1.346 ***	0.038	
EP_AG1 (Age < 12 months)	0.185 ***	0.026	1.203
EP_AG2 (Age = 1 - 2 years)	0.448 ***	0.023	1.565
EP_AG3 (Age = 3 - 6 years)	-0.199 ***	0.018	0.820
EP_AG4 (Age = 7 - 12 years)	-0.602 ***	0.017	0.548
BLACK (Black Race)	-0.556 ***	0.015	0.573
OTHER (Other Race)	-0.727 ***	0.048	0.484
UNKNOWN (Unknown Race)	-0.386 ***	0.064	0.680
HISPANIC (Hispanic Ethnicity)	0.372 ***	0.055	1.450
FEMALE (Sex)	0.311 ***	0.012	1.364
URBAN (Urban Residence)	-0.079 ***	0.024	0.924
SUBURBAN (Surburban Residence)	0.038	0.026	1.039
UNIF1 (Blind/Disabled)	0.006	0.037	1.006
UNIF4 (Poverty-Related)	0.039	0.024	1.040
UNIF5 (Medically Needy)	-0.145 ***	0.016	0.865
ADJNOMO12 (Months Enrolled in Medicaid)	0.210 ***	0.002	
MOS_PCCM (Months Enrolled in a PCCM Program)	0.036 ***	0.002	
PARTIC (User of Preventive Care Visits)	0.507 ***	0.015	1.660
SHORTAGE (Shortage Area)	-0.006	0.015	0.994
CLINCP1K (Participating Clinics per 1,000 Population)	-0.175 **	0.066	
1/P02A (Participating Primary Care Providers/Child Medicaid Enrollees)	-1.130	1.557	
OVERKID (Children with data in both 1989 and 1992)	0.061 ***	0.013	1.063
1992 Year Dummy	0.063 **	0.023	1.065
(1/P02A) * 1992 Year Dummy	-0.680	1.891	
-2 LOG L	155,494.67		
Chi-Square Statistic	25,007.79		
P Value	0.000		
N	135,230		

*** p < .001; ** p < .01; * p < .05

Excluded categories: Ages 13+ years, White, Male, Rural, AFDC/Foster Care, and 1989.

APPENDIX TABLE N-4

LOGISTIC REGRESSION RESULTS: PROBABILITY OF RECEIVING PRESCRIPTION DRUGS, CHILDREN UNDER 21 YEARS OF AGE

POOLED MODEL INCLUDING INTERACTION TERM AND DUMMY VARIABLE FOR YEAR - TENNESSEE

Dependent Variable: RX			
Regressor *(X)*	Coefficient	Standard Error	Odds Ratio
Intercept	-1.114 ***	0.047	
EP_AG1 (Age < 12 months)	-0.030	0.034	0.970
EP_AG2 (Age = 1 - 2 years)	0.327 ***	0.029	1.387
EP_AG3 (Age = 3 - 6 years)	-0.278 ***	0.024	0.757
EP_AG4 (Age = 7 - 12 years)	-0.556 ***	0.022	0.574
BLACK (Black Race)	-0.800 ***	0.019	0.449
OTHER (Other Race)	-1.098 ***	0.117	0.334
UNKNOWN (Unknown Race)	-0.347 ***	0.108	0.712
HISPANIC (Hispanic Ethnicity)	0.399 **	0.159	1.491
FEMALE (Sex)	0.342 ***	0.016	1.408
URBAN (Urban Residence)	-0.430 ***	0.028	0.651
SUBURBAN (Surburban Residence)	0.002	0.028	1.002
UNIF1 (Blind/Disabled)	-0.081 *	0.042	0.922
UNIF3 (Foster Care)	-0.320 ***	0.059	0.726
UNIF4 (Poverty-Related)	0.161 ***	0.022	1.175
UNIF5 (Medically Needy)	-0.176 ***	0.022	0.839
ADJNOMO12 (Months Enrolled in Medicaid)	0.219 ***	0.002	
MOS_PCCM (Months Enrolled in a PCCM Program)	-0.035 ***	0.008	
PARTIC (User of Preventive Care Visits)	0.619 ***	0.022	1.857
SHORTAGE (Shortage Area)	-0.004	0.022	0.996
CLINCP1K (Participating Clinics per 1,000 Population)	-0.250 ***	0.056	
1/P02A (Participating Primary Care Providers/Child Medicaid Enrollees)	8.245 *	3.564	
OVERKID (Children with data in both 1989 and 1992)	0.093 ***	0.018	1.097
1992 Year Dummy	0.127 ***	0.036	1.135
(1/P02A) * 1992 Year Dummy	-0.873	4.754	
-2 LOG L		93,777.66	
Chi-Square Statistic		18,253.65	
P Value		0.000	
N		83,999	

*** p < .001; ** p < .01; * p < .05

Excluded categories: Ages 13+ years, White, Male, Rural, AFDC, and 1989.

Appendix O

Number of Prescription Drugs Among Users:
Pooled Linear Regression Models

APPENDIX TABLE O-1

ORDINARY LEAST SQUARES RESULTS: PRESCRIPTION DRUGS, ALL USERS UNDER 21 YEARS OF AGE

POOLED MODEL INCLUDING INTERACTION TERM AND THE DUMMY VARIABLE FOR YEAR - CALIFORNIA

Dependent Variable: N_DRUG		
Regressor *(X)*	Coefficient	Standard Error
Intercept	-0.725 ***	0.194
EP_AG1 (Age < 12 months)	1.006 ***	0.060
EP_AG2 (Age = 1 - 2 years)	2.894 ***	0.045
EP_AG3 (Age = 3 - 6 years)	0.464 ***	0.040
EP_AG4 (Age = 7 - 12 years)	-0.448 ***	0.040
BLACK (Black Race)	-0.256 ***	0.044
OTHER (Other Race)	4.062 ***	0.044
UNKNOWN (Unknown Race)	1.678 ***	0.085
HISPANIC (Hispanic Ethnicity)	-3.648 ***	0.044
FEMALE (Sex)	0.010	0.027
URBAN (Urban Residence)	-0.603 ***	0.171
SUBURBAN (Surburban Residence)	-0.716 ***	0.168
UNIF1 (Blind/Disabled)	6.462 ***	0.099
UNIF3 (Foster Care)	0.419 ***	0.072
UNIF4 (Poverty-Related)	-0.696 ***	0.090
UNIF5 (Medically Needy)	-0.246 ***	0.035
ADJNOMO12 (Months Enrolled in Medicaid)	0.474 ***	0.005
PARTIC (User of Preventive Care Visits)	1.597 ***	0.031
SHORTAGE (Shortage Area)	1.362 ***	0.037
CLINCP1K (Participating Clinics per 1,000 Population)	-12.847 ***	0.340
OVERKID (Service use in '89 and '92)	0.204 ***	0.031
1/P02A (Participating Primary Care Providers/Child Medicaid Enrollees)	-8.634	9.827
1992 Year Dummy	1.478 ***	0.070
(1/P02A) * 1992 Year Dummy	-130.580 ***	15.245
F Statistic	1983.09	
P Value	0.000	
N	302,265	
R^2	0.131	

*** p < .001; ** p < .01; * p < .05

Excluded categories: Ages 13+ years, White, Male, Rural, AFDC, and 1989.

APPENDIX TABLE O-2

ORDINARY LEAST SQUARES RESULTS: PRESCRIPTION DRUGS, ALL USERS UNDER 21 YEARS OF AGE

POOLED MODEL INCLUDING INTERACTION TERM AND THE DUMMY VARIABLE FOR YEAR - GEORGIA

Dependent Variable: N_DRUG		
Regressor *(X)*	Coefficient	Standard Error
Intercept	2.758 ***	0.159
EP_AG1 (Age < 12 months)	0.048	0.105
EP_AG2 (Age = 1 - 2 years)	1.103 ***	0.080
EP_AG3 (Age = 3 - 6 years)	-1.170 ***	0.075
EP_AG4 (Age = 7 - 12 years)	-1.766 ***	0.077
BLACK (Black Race)	-1.768 ***	0.057
OTHER (Other Race)	0.211	0.356
UNKNOWN (Unknown Race)	0.246	0.277
HISPANIC (Hispanic Ethnicity)	-2.170 ***	0.430
FEMALE (Sex)	0.233 ***	0.051
URBAN (Urban Residence)	-0.876 ***	0.076
SUBURBAN (Surburban Residence)	-0.143 *	0.073
UNIF1 (Blind/Disabled)	6.845 ***	0.131
UNIF3 (Foster Care)	0.426 *	0.184
UNIF4 (Poverty-Related)	0.427 ***	0.071
UNIF5 (Medically Needy)	0.212 *	0.088
ADJNOMO12 (Months Enrolled in Medicaid)	0.515 ***	0.010
PARTIC (User of Preventive Care Visits)	0.718 ***	0.057
SHORTAGE (Shortage Area)	-0.046	0.051
CLINCP1K (Participating Clinics per 1,000 Population)	1.864 ***	0.472
OVERKID (Service use in '89 and '92)	-0.176 **	0.058
1/P02A (Participating Primary Care Providers/Child Medicaid Enrollees)	-70.565 ***	10.276
1992 Year Dummy	-0.032	0.117
(1/P02A) * 1992 Year Dummy	14.453	14.083
F Statistic	456.80	
P Value	0.000	
N	64,545	
R^2	0.140	

*** $p < .001$; ** $p < .01$; * $p < .05$

Excluded categories: Ages 13+ years, White, Male, Rural, AFDC, and 1989.

APPENDIX TABLE O-3

ORDINARY LEAST SQUARES RESULTS: PRESCRIPTION DRUGS, ALL USERS UNDER 21 YEARS OF AGE

POOLED MODEL INCLUDING INTERACTION TERM AND THE DUMMY VARIABLE FOR YEAR - MICHIGAN

Dependent Variable: N_DRUG		
Regressor *(X)*	Coefficient	Standard Error
Intercept	1.938 ***	0.157
EP_AG1 (Age < 12 months)	-1.087 ***	0.106
EP_AG2 (Age = 1 - 2 years)	-0.227 **	0.078
EP_AG3 (Age = 3 - 6 years)	-2.117 ***	0.070
EP_AG4 (Age = 7 - 12 years)	-2.336 ***	0.069
BLACK (Black Race)	-0.738 ***	0.058
OTHER (Other Race)	-0.922 ***	0.212
UNKNOWN (Unknown Race)	-0.268	0.272
HISPANIC (Hispanic Ethnicity)	0.157	0.241
FEMALE (Sex)	0.462 ***	0.048
URBAN (Urban Residence)	0.173 *	0.090
SUBURBAN (Surburban Residence)	0.021	0.098
UNIF1 (Blind/Disabled)	7.012 ***	0.139
UNIF4 (Poverty-Related)	-0.014	0.094
UNIF5 (Medically Needy)	0.341 ***	0.065
ADJNOMO12 (Months Enrolled in Medicaid)	0.412 ***	0.009
MOS_PCCM (Months enrolled in a PCCM program)	0.173 ***	0.007
PARTIC (User of Preventive Care Visits)	0.267 ***	0.055
SHORTAGE (Shortage Area)	0.108	0.059
CLINCP1K (Participating Clinics per 1,000 Population)	-0.937 ***	0.253
OVERKID (Service use in '89 and '92)	-0.264 ***	0.052
1/P02A (Participating Primary Care Providers/Child Medicaid Enrollees)	7.651	6.103
1992 Year Dummy	0.466 ***	0.089
(1/P02A) * 1992 Year Dummy	-8.304	7.305
F Statistic	362.16	
P Value	0.000	
N	82,895	
R^2	0.091	

*** p < .001; ** p < .01; * p < .05

Excluded categories: Ages 13+ years, White, Male, Rural, AFDC/Foster Care, and 1989.

APPENDIX TABLE O-4

ORDINARY LEAST SQUARES RESULTS: PRESCRIPTION DRUGS, ALL USERS UNDER 21 YEARS OF AGE

POOLED MODEL INCLUDING INTERACTION TERM AND THE DUMMY VARIABLE FOR YEAR - TENNESSEE

Dependent Variable: N_DRUG		
Regressor *(X)*	Coefficient	Standard Error
Intercept	2.042 ***	0.183
EP_AG1 (Age < 12 months)	-0.757 ***	0.132
EP_AG2 (Age = 1 - 2 years)	0.388 ***	0.097
EP_AG3 (Age = 3 - 6 years)	-1.431 ***	0.087
EP_AG4 (Age = 7 - 12 years)	-1.637 ***	0.087
BLACK (Black Race)	-1.928 ***	0.069
OTHER (Other Race)	-1.628 **	0.533
UNKNOWN (Unknown Race)	0.404	0.380
HISPANIC (Hispanic Ethnicity)	0.889	0.706
FEMALE (Sex)	0.475 ***	0.059
URBAN (Urban Residence)	-0.767 ***	0.096
SUBURBAN (Surburban Residence)	0.362 ***	0.093
UNIF1 (Blind/Disabled)	5.873 ***	0.146
UNIF3 (Foster Care)	-0.165	0.219
UNIF4 (Poverty-Related)	0.014	0.076
UNIF5 (Medically Needy)	-0.138	0.086
ADJNOMO12 (Months Enrolled in Medicaid)	0.467 ***	0.010
MOS_PCCM (Months enrolled in a PCCM program)	-0.105 **	0.033
PARTIC (User of Preventive Care Visits)	0.496 ***	0.071
SHORTAGE (Shortage Area)	0.238 **	0.076
CLINCP1K (Participating Clinics per 1,000 Population)	-0.513 **	0.201
OVERKID (Service use in '89 and '92)	-0.067	0.065
1/P02A (Participating Primary Care Providers/Child Medicaid Enrollees)	-15.189	13.214
1992 Year Dummy	0.945 ***	0.130
(1/P02A) * 1992 Year Dummy	-21.319	16.937
F Statistic	292.82	
P Value	0.000	
N	51,587	
R^2	0.120	

*** p < .001; ** p < .01; * p < .05

Excluded categories: Ages 13+ years, White, Male, Rural, AFDC, and 1989.

Appendix P

Probability of Receiving Inpatient Care:
Pooled Logistic Regression Models

APPENDIX TABLE P-1

LOGISTIC REGRESSION RESULTS: PROBABILITY OF RECEIVING INPATIENT CARE, CHILDREN AGED 1 TO 12 YEARS

POOLED MODEL INCLUDING INTERACTION TERM AND DUMMY VARIABLE FOR YEAR - CALIFORNIA

Dependent Variable: INPSTAY			
Regressor *(X)*	Coefficient	Standard Error	Odds Ratio
Intercept	-5.326 ***	0.155	
EP_AG2 (Age = 1 - 2 years)	1.183 ***	0.031	3.265
EP_AG3 (Age = 3 - 6 years)	0.251 ***	0.030	1.285
BLACK (Black Race)	0.024	0.035	1.024
OTHER (Other Race)	-0.256 ***	0.045	0.774
UNKNOWN (Unknown Race)	0.228 ***	0.056	1.256
HISPANIC (Hispanic Ethnicity)	0.353 ***	0.044	1.423
FEMALE (Sex)	-0.262 ***	0.022	0.769
URBAN (Urban Residence)	0.235	0.140	1.265
SUBURBAN (Surburban Residence)	0.207	0.145	1.230
UNIF1 (Blind/Disabled)	2.217 ***	0.053	9.177
UNIF3 (Foster Care)	0.421 ***	0.054	1.523
UNIF4 (Poverty-Related)	0.245 ***	0.064	1.277
UNIF5 (Medically Needy)	0.354 ***	0.027	1.425
ADJNOMO12 (Months Enrolled in Medicaid)	0.063 ***	0.004	
PARTIC (User of Preventive Care Visits)	0.261 ***	0.025	1.298
SHORTAGE (Shortage Area)	0.153 ***	0.033	1.165
1/P02A (Participating Primary Care Providers/Child Medicaid Enrollees)	35.543 ***	7.103	
OVERKID (Children with data in both 1989 and 1992)	0.015	0.026	1.015
1992 Year Dummy	-0.138 **	0.055	0.871
(1/P02A) * 1992 Year Dummy	-19.678	11.793	
-2 LOG L	79,304.37		
Chi-Square Statistic	5,360.69		
P Value	0.000		
N	345,354		

*** p < .001; ** p < .01; * p < .05

Excluded categories: Ages 7 - 12 years, White, Male, Rural, AFDC, and 1989.

APPENDIX TABLE P-2

LOGISTIC REGRESSION RESULTS: PROBABILITY OF RECEIVING INPATIENT CARE, CHILDREN AGED 1 TO 12 YEARS

POOLED MODEL INCLUDING INTERACTION TERM AND DUMMY VARIABLE FOR YEAR - GEORGIA

Dependent Variable: INPSTAY			
Regressor *(X)*	Coefficient	Standard Error	Odds Ratio
Intercept	-4.131 ***	0.117	
EP_AG2 (Age = 1 - 2 years)	1.619 ***	0.054	5.047
EP_AG3 (Age = 3 - 6 years)	0.529 ***	0.053	1.697
BLACK (Black Race)	-0.397 ***	0.041	0.673
OTHER (Other Race)	-0.414	0.328	0.661
UNKNOWN (Unknown Race)	0.289 *	0.135	1.335
HISPANIC (Hispanic Ethnicity)	0.211	0.363	1.235
FEMALE (Sex)	-0.313 ***	0.036	0.731
URBAN (Urban Residence)	-0.571 ***	0.048	0.565
SUBURBAN (Surburban Residence)	-0.251 ***	0.048	0.778
UNIF1 (Blind/Disabled)	1.690 ***	0.077	5.413
UNIF3 (Foster Care)	0.089	0.139	1.093
UNIF4 (Poverty-Related)	0.163 **	0.051	1.177
UNIF5 (Medically Needy)	0.303 ***	0.063	1.354
ADJNOMO12 (Months Enrolled in Medicaid)	0.125 ***	0.007	
PARTIC (User of Preventive Care Visits)	0.098 **	0.039	1.103
SHORTAGE (Shortage Area)	-0.061	0.037	0.941
1/P02A (Participating Primary Care Providers/Child Medicaid Enrollees)	-20.045 **	7.456	
OVERKID (Children with data in both 1989 and 1992)	0.083	0.048	1.087
1992 Year Dummy	-0.308 ***	0.086	0.735
(1/P02A) * 1992 Year Dummy	-4.383	10.295	
-2 LOG L		24,764.37	
Chi-Square Statistic		2,698.56	
P Value		0.000	
N		68,802	

*** p < .001; ** p < .01; * p < .05

Excluded categories: Ages 7 - 12 years, White, Male, Rural, AFDC, and 1989.

APPENDIX TABLE P-3

LOGISTIC REGRESSION RESULTS: PROBABILITY OF RECEIVING INPATIENT CARE, CHILDREN AGED 1 TO 12 YEARS

POOLED MODEL INCLUDING INTERACTION TERM AND DUMMY VARIABLE FOR YEAR - MICHIGAN

Dependent Variable: INPSTAY			
Regressor *(X)*	Coefficient	Standard Error	Odds Ratio
Intercept	-5.592 ***	0.130	
EP_AG2 (Age = 1 - 2 years)	1.843 ***	0.058	6.313
EP_AG3 (Age = 3 - 6 years)	0.594 ***	0.058	1.812
BLACK (Black Race)	-0.037	0.046	0.963
OTHER (Other Race)	-0.293	0.184	0.746
UNKNOWN (Unknown Race)	-0.266	0.212	0.766
HISPANIC (Hispanic Ethnicity)	0.219	0.207	1.244
FEMALE (Sex)	-0.224 ***	0.039	0.799
URBAN (Urban Residence)	0.171 **	0.068	1.186
SUBURBAN (Surburban Residence)	0.309 ***	0.076	1.362
UNIF1 (Blind/Disabled)	1.777 ***	0.083	5.912
UNIF4 (Poverty-Related)	0.071	0.074	1.074
UNIF5 (Medically Needy)	0.185 ***	0.055	1.203
ADJNOMO12 (Months Enrolled in Medicaid)	0.128 ***	0.008	
MOS_PCCM (Months Enrolled in a PCCM Program)	-0.030 ***	0.007	
PARTIC (User of Preventive Care Visits)	0.191 ***	0.042	1.210
SHORTAGE (Shortage Area)	-0.052	0.047	0.950
1/P02A (Participating Primary Care Providers/Child Medicaid Enrollees)	-4.126	4.833	
OVERKID (Children with data in both 1989 and 1992)	0.101 *	0.045	1.106
1992 Year Dummy	-0.186 **	0.074	0.830
(1/P02A) * 1992 Year Dummy	-0.753	5.953	
-2 LOG L	23,063.79		
Chi-Square Statistic	2,365.92		
P Value	0.000		
N	82,456		

*** p < .001; ** p < .01; * p < .05

Excluded categories: Ages 7 - 12 years, White, Male, Rural, AFDC/Foster Care, and 1989.

APPENDIX TABLE P-4

LOGISTIC REGRESSION RESULTS: PROBABILITY OF RECEIVING INPATIENT CARE, CHILDREN AGED 1 TO 12 YEARS

POOLED MODEL INCLUDING INTERACTION TERM AND DUMMY VARIABLE FOR YEAR - TENNESSEE

Dependent Variable: INPSTAY			
Regressor *(X)*	Coefficient	Standard Error	Odds Ratio
Intercept	-4.143 ***	0.127	
EP_AG2 (Age = 1 - 2 years)	1.425 ***	0.060	4.159
EP_AG3 (Age = 3 - 6 years)	0.453 ***	0.057	1.574
BLACK (Black Race)	-0.295 ***	0.048	0.744
OTHER (Other Race)	-1.802 **	0.713	0.165
UNKNOWN (Unknown Race)	0.336	0.188	1.400
HISPANIC (Hispanic Ethnicity)	1.581 *	0.774	4.862
FEMALE (Sex)	-0.104 **	0.039	0.902
URBAN (Urban Residence)	-0.349 ***	0.063	0.705
SUBURBAN (Surburban Residence)	-0.105	0.060	0.900
UNIF1 (Blind/Disabled)	1.341 ***	0.082	3.822
UNIF3 (Foster Care)	-0.056	0.181	0.946
UNIF4 (Poverty-Related)	-0.087	0.050	0.917
UNIF5 (Medically Needy)	0.271 ***	0.061	1.312
ADJNOMO12 (Months Enrolled in Medicaid)	0.122 ***	0.008	
MOS_PCCM (Months Enrolled in a PCCM Program)	-0.012	0.023	
PARTIC (User of Preventive Care Visits)	0.178 ***	0.044	1.195
SHORTAGE (Shortage Area)	-0.210 ***	0.052	0.811
1/P02A (Participating Primary Care Providers/Child Medicaid Enrollees)	-12.676	8.805	
OVERKID (Children with data in both 1989 and 1992)	-0.011	0.048	0.989
1992 Year Dummy	-0.294 ***	0.089	0.745
(1/P02A) * 1992 Year Dummy	4.377	11.771	
-2 LOG L		20,595.34	
Chi-Square Statistic		1,767.62	
P Value		0.000	
N		5,254	

*** p < .001; ** p < .01; * p < .05

Excluded categories: Ages 7 - 12 years, White, Male, Rural, AFDC, and 1989.

Appendix Q

Number of Inpatient Days Among Users:
Pooled Linear Regression Models

APPENDIX TABLE Q-1

ORDINARY LEAST SQUARES RESULTS: INPATIENT DAYS, USERS AGED 1 TO 12 YEARS

POOLED MODEL INCLUDING INTERACTION TERM AND THE DUMMY VARIABLE FOR YEAR - CALIFORNIA

Dependent Variable: N_INPDSN		
Regressor *(X)*	Coefficient	Standard Error
Intercept	0.617 ***	0.147
EP_AG2 (Age = 1 - 2 years)	0.150 ***	0.029
EP_AG3 (Age = 3 - 6 years)	0.102 ***	0.028
BLACK (Black Race)	0.006	0.033
OTHER (Other Race)	-0.075	0.043
UNKNOWN (Unknown Race)	0.205 ***	0.052
HISPANIC (Hispanic Ethnicity)	-0.008	0.042
FEMALE (Sex)	-0.013	0.020
URBAN (Urban Residence)	0.208	0.132
SUBURBAN (Surburban Residence)	0.234	0.137
UNIF1 (Blind/Disabled)	0.755 ***	0.048
UNIF3 (Foster Care)	0.180 ***	0.051
UNIF4 (Poverty-Related)	0.052	0.061
UNIF5 (Medically Needy)	0.118 ***	0.028
ADJNOMO12 (Months Enrolled in Medicaid)	0.029 ***	0.004
PARTIC (User of Preventive Care Visits)	-0.062 **	0.024
SHORTAGE (Shortage Area)	0.049	0.031
OVERKID (Service use in '89 and '92)	-0.080 ***	0.025
1/P02A (Participating Primary Care Providers/Child Medicaid Enrollees)	11.998	6.905
1992 Year Dummy	0.016	0.053
(1/P02A) * 1992 Year Dummy	-17.641	11.449
F Statistic	36.38	
P Value	0.000	
N	9,173	
R^2	0.074	

*** $p < .001$; ** $p < .01$; * $p < .05$

Excluded categories: Ages 7 - 12 years, White, Male, Rural, AFDC, and 1989.

APPENDIX TABLE Q-2

ORDINARY LEAST SQUARES RESULTS: INPATIENT DAYS, USERS AGED 1 TO 12 YEARS

POOLED MODEL INCLUDING INTERACTION TERM AND THE DUMMY VARIABLE FOR YEAR - GEORGIA

Dependent Variable: N_INPDSN		
Regressor *(X)*	Coefficient	Standard Error
Intercept	1.030 ***	0.094
EP_AG2 (Age = 1 - 2 years)	0.150 ***	0.044
EP_AG3 (Age = 3 - 6 years)	0.027	0.043
BLACK (Black Race)	-0.061	0.033
OTHER (Other Race)	0.112	0.271
UNKNOWN (Unknown Race)	0.184 *	0.094
HISPANIC (Hispanic Ethnicity)	-0.186	0.299
FEMALE (Sex)	0.005	0.029
URBAN (Urban Residence)	-0.050	0.038
SUBURBAN (Surburban Residence)	-0.018	0.039
UNIF1 (Blind/Disabled)	0.577 ***	0.057
UNIF3 (Foster Care)	0.072	0.114
UNIF4 (Poverty-Related)	-0.002	0.042
UNIF5 (Medically Needy)	0.079	0.052
ADJNOMO12 (Months Enrolled in Medicaid)	0.027 ***	0.006
PARTIC (User of Preventive Care Visits)	0.001	0.032
SHORTAGE (Shortage Area)	-0.010	0.030
OVERKID (Service use in '89 and '92)	-0.060	0.040
1/P02A (Participating Primary Care Providers/Child Medicaid Enrollees)	-3.775	5.540
1992 Year Dummy	-0.152 **	0.067
(1/P02A) * 1992 Year Dummy	4.585	7.938
F Statistic	10.76	
P Value	0.000	
N	3,465	
R^2	0.059	

*** p < .001; ** p < .01; * p < .05

Excluded categories: Ages 7 - 12 years, White, Male, Rural, AFDC, and 1989.

APPENDIX TABLE Q-3

ORDINARY LEAST SQUARES RESULTS: INPATIENT DAYS, USERS AGED 1 TO 12 YEARS

POOLED MODEL INCLUDING INTERACTION TERM AND THE DUMMY VARIABLE FOR YEAR - MICHIGAN

Dependent Variable: N_INPDSN		
Regressor *(X)*	Coefficient	Standard Error
Intercept	0.861 ***	0.119
EP_AG2 (Age = 1 - 2 years)	0.114 *	0.053
EP_AG3 (Age = 3 - 6 years)	0.049	0.053
BLACK (Black Race)	0.123 **	0.040
OTHER (Other Race)	-0.057	0.164
UNKNOWN (Unknown Race)	0.057	0.185
HISPANIC (Hispanic Ethnicity)	0.120	0.185
FEMALE (Sex)	-0.066 *	0.034
URBAN (Urban Residence)	-0.008	0.061
SUBURBAN (Surburban Residence)	-0.006	0.068
UNIF1 (Blind/Disabled)	0.943 ***	0.070
UNIF4 (Poverty-Related)	0.029	0.066
UNIF5 (Medically Needy)	0.106 *	0.050
ADJNOMO12 (Months Enrolled in Medicaid)	0.021 **	0.007
MOS_PCCM (Months enrolled in a PCCM program)	0.001	0.006
PARTIC (User of Preventive Care Visits)	-0.003	0.037
SHORTAGE (Shortage Area)	0.005	0.042
OVERKID (Service use in '89 and '92)	0.027	0.041
1/P02A (Participating Primary Care Providers/Child Medicaid Enrollees)	1.167	4.504
1992 Year Dummy	0.096	0.065
(1/P02A) * 1992 Year Dummy	-5.811	5.245
F Statistic	11.85	
P Value	0.000	
N	2,948	
R^2	0.075	

*** p < .001; ** p < .01; * p < .05

Excluded categories: Ages 7 - 12 years, White, Male, Rural, AFDC/Foster Care, and 1989.

APPENDIX TABLE Q-4

ORDINARY LEAST SQUARES RESULTS: INPATIENT DAYS, USERS AGED 1 TO 12 YEARS

POOLED MODEL INCLUDING INTERACTION TERM AND THE DUMMY VARIABLE FOR YEAR - TENNESSEE

Dependent Variable: N_INPDSN		
Regressor *(X)*	Coefficient	Standard Error
Intercept	1.095 ***	0.095
EP_AG2 (Age = 1 - 2 years)	0.231 ***	0.043
EP_AG3 (Age = 3 - 6 years)	0.083 *	0.041
BLACK (Black Race)	0.030	0.034
OTHER (Other Race)	1.231 *	0.529
UNKNOWN (Unknown Race)	0.899 ***	0.120
HISPANIC (Hispanic Ethnicity)	-0.906	0.571
FEMALE (Sex)	0.003	0.028
URBAN (Urban Residence)	-0.051	0.045
SUBURBAN (Surburban Residence)	-0.073	0.042
UNIF1 (Blind/Disabled)	0.407 ***	0.054
UNIF3 (Foster Care)	0.020	0.130
UNIF4 (Poverty-Related)	-0.026	0.035
UNIF5 (Medically Needy)	0.020	0.046
ADJNOMO12 (Months Enrolled in Medicaid)	0.013 *	0.006
MOS_PCCM (Months enrolled in a PCCM program)	-0.025	0.018
PARTIC (User of Preventive Care Visits)	-0.037	0.032
SHORTAGE (Shortage Area)	-0.049	0.036
OVERKID (Service use in '89 and '92)	0.040	0.034
1/P02A (Participating Primary Care Providers/Child Medicaid Enrollees)	-10.657	6.579
1992 Year Dummy	-0.005	0.065
(1/P02A) * 1992 Year Dummy	2.133	8.723
F Statistic	10.38	
P Value	0.000	
N	2,886	
R^2	0.071	

*** p < .001; ** p < .01; * p < .05

Excluded categories: Ages 7 - 12 years, White, Male, Rural, AFDC, and 1989.

Appendix R

Descriptive Tables for Dental Analysis

APPENDIX TABLE R-1.1

Age Distribution of Dental Care Services:
Category of Service by Age Group,

1989 and 1992

California

Service Category	Age Group									
	< 12 mos.		1-2 yrs.		3-6 yrs.		7-12 yrs.		13-20 yrs.	
	1989	1992	1989	1992	1989	1992	1989	1992	1989	1992
Any Dental Care	0.0	0.0	1.8	2.1	25.1	25.2	39.4	38.5	33.6	34.2
Any Diagnostic Services	0.0	0.0	1.7	2.0	25.2	25.4	39.8	38.6	33.3	33.9
Any Preventive Services	0.0	0.0	0.4	0.6	12.1	12.3	24.4	24.0	63.1	63.2
Any Therapeutic Services	0.0	0.0	1.5	1.5	23.4	23.0	40.5	39.8	34.5	35.6
Any Diagnostic, Preventive, or Therapeutic Services	0.0	0.0	1.8	2.1	25.0	25.3	39.4	38.3	33.8	34.3
Any Emergency Services	0.1	0.0	1.6	1.9	16.2	14.7	30.3	26.1	51.8	57.2
Any Orthodontic Services	0.0	0.0	0.4	0.0	2.9	0.5	42.1	38.0	54.6	61.4

APPENDIX TABLE R-1.1

Age Distribution of Dental Care Services:
Category of Service by Age Group,

1989 and 1992

Georgia

Service Category	Age Group									
	< 12 mos.		1-2 yrs.		3-6 yrs.		7-12 yrs.		13-20 yrs.	
	1989	1992	1989	1992	1989	1992	1989	1992	1989	1992
Any Dental Care	0.0	0.0	1.6	2.1	27.8	34.4	38.2	35.4	32.4	28.1
Any Diagnostic Services	0.0	0.0	1.6	2.1	28.0	34.5	38.5	35.5	31.9	27.8
Any Preventive Services	0.0	0.0	1.1	1.4	28.8	35.3	40.6	37.3	29.5	25.9
Any Therapeutic Services	0.0	0.0	0.8	1.1	21.9	28.0	39.4	37.3	37.9	33.6
Any Diagnostic, Preventive, or Therapeutic Services	0.0	0.0	1.5	2.1	27.8	34.4	38.2	35.4	32.4	28.1
Any Emergency Services	0.1	0.1	2.8	4.8	21.0	23.5	28.9	29.9	47.3	41.1
Any Orthodontic Services	0.0	0.0	0.0	0.0	0.0	0.0	33.3	30.8	66.7	69.2

APPENDIX TABLE R-1.1

Age Distribution of Dental Care Services:
Category of Service by Age Group,

1989 and 1992

Michigan

Service Category	Age Group									
	< 12 mos.		1-2 yrs.		3-6 yrs.		7-12 yrs.		13-20 yrs.	
	1989	1992	1989	1992	1989	1992	1989	1992	1989	1992
Any Dental Care	0.0	0.0	1.2	1.5	27.4	30.8	37.1	36.5	34.3	31.2
Any Diagnostic Services	0.0	0.0	1.0	1.2	27.6	31.2	37.4	36.6	34.0	31.0
Any Preventive Services	0.0	0.0	0.5	0.6	28.4	31.5	39.2	38.4	31.9	29.6
Any Therapeutic Services	0.0	0.0	0.7	0.9	20.5	23.3	39.4	39.5	39.4	36.3
Any Diagnostic, Preventive, or Therapeutic Services	0.0	0.0	1.0	1.2	27.4	30.8	37.2	36.6	34.3	31.3
Any Emergency Services	0.2	0.2	4.9	5.9	21.2	24.9	29.3	29.5	44.5	39.6
Any Orthodontic Services	1.2	0.0	0.0	0.9	2.4	7.8	31.0	36.5	65.5	54.8

APPENDIX TABLE R-1.1

Age Distribution of Dental Care Services:
Category of Service by Age Group,

1989 and 1992

Tennessee

Service Category	Age Group									
	< 12 mos.		1-2 yrs.		3-6 yrs.		7-12 yrs.		13-20 yrs.	
	1989	1992	1989	1992	1989	1992	1989	1992	1989	1992
Any Dental Care	0.1	0.1	2.4	3.8	25.9	30.3	38.2	36.0	33.5	29.8
Any Diagnostic Services	0.1	0.1	2.4	3.8	26.4	30.8	38.7	36.4	32.5	28.9
Any Preventive Services	0.0	0.0	1.7	3.3	26.2	31.0	40.3	37.9	31.8	27.8
Any Therapeutic Services	0.0	0.0	1.1	1.5	21.4	25.2	38.4	38.7	39.1	34.5
Any Diagnostic, Preventive, or Therapeutic Services	0.1	0.1	2.4	3.8	26.2	30.6	38.3	36.1	33.1	29.4
Any Emergency Services	0.1	0.1	4.6	4.7	22.5	26.2	27.0	26.8	45.7	42.3
Any Orthodontic Services	0.0	0.0	0.0	0.0	0.0	0.1	23.2	23.0	76.7	77.0

APPENDIX TABLE R-1.2

**Distributions of Children Receiving Dental Care Services:
Category of Service by Medicaid Eligibility Group
1989 and 1992**

California

Service Category	Medicaid Eligibility Group									
	AFDC Cash		Poverty related		Blind/ Disabled		Foster Care		Medically Needy/ Other	
	1989	1992	1989	1992	1989	1992	1989	1992	1989	1992
Any Dental Care	70.1	64.5	0.0	1.2	2.4	2.6	5.9	5.8	21.5	25.8
Any Diagnostic Services	70.6	64.9	0.0	1.2	2.2	2.4	5.9	6.0	21.4	25.5
Any Preventive Services	60.6	56.3	0.0	0.6	3.9	3.5	5.2	5.1	30.2	34.5
Any Therapeutic Services	70.3	64.8	0.0	1.2	2.0	2.3	4.7	4.7	22.9	27.0
Any Diagnostic, Preventive, or Therapeutic Services	70.2	64.7	0.0	1.2	2.3	2.5	5.9	5.9	21.6	25.7
Any Emergency Services	67.9	59.7	0.0	0.7	4.4	5.2	5.5	4.1	22.1	30.2
Any Orthodontic Services	52.9	64.0	0.0	0.1	10.4	3.2	6.7	6.5	30.0	26.2

APPENDIX TABLE R-1.2

Distributions of Children Receiving Dental Care Services:
Category of Service by Medicaid Eligibility Group
1989 and 1992

Georgia

Service Category	Medicaid Eligibility Group									
	AFDC Cash		Poverty related		Blind/ Disabled		Foster Care		Medically Needy/ Other	
	1989	1992	1989	1992	1989	1992	1989	1992	1989	1992
Any Dental Care	81.0	63.3	3.0	17.1	4.8	5.1	3.9	5.1	7.2	5.1
Any Diagnostic Services	81.1	63.3	3.0	17.1	4.8	5.1	4.0	5.1	7.1	5.1
Any Preventive Services	81.8	63.6	2.3	16.7	4.5	5.0	4.2	5.0	7.2	5.0
Any Therapeutic Services	81.2	64.0	3.2	16.9	4.7	4.8	3.3	4.8	7.6	4.8
Any Diagnostic, Preventive, or Therapeutic Services	81.0	63.3	3.0	17.1	4.8	5.1	3.9	5.1	7.2	5.1
Any Emergency Services	78.4	60.8	5.5	20.5	7.0	6.2	2.6	6.2	6.4	6.2
Any Orthodontic Services	100.0	53.8	0.0	0.0	0.0	15.4	0.0	15.4	0.0	15.4

APPENDIX TABLE R-1.2

Distributions of Children Receiving Dental Care Services: Category of Service by Medicaid Eligibility Group 1989 and 1992

Michigan

Service Category	Medicaid Eligibility Group									
	AFDC Cash		Poverty related		Blind/ Disabled		Foster Care		Medically Needy/ Other	
	1989	1992	1989	1992	1989	1992	1989	1992	1989	1992
Any Dental Care	77.9	68.0	0.5	6.0	2.2	3.7	NA	NA	19.3	22.3
Any Diagnostic Services	78.1	68.2	0.5	5.9	2.2	3.7	NA	NA	19.2	22.2
Any Preventive Services	78.7	68.4	0.4	5.7	2.0	3.5	NA	NA	19.0	22.4
Any Therapeutic Services	77.2	67.8	0.6	5.8	2.0	3.5	NA	NA	20.3	22.9
Any Diagnostic, Preventive, or Therapeutic Services	77.9	68.0	0.5	5.9	2.2	3.7	NA	NA	19.3	22.4
Any Emergency Services	75.6	67.5	1.1	7.0	3.1	4.5	NA	NA	20.2	21.0
Any Orthodontic Services	61.9	49.6	0.0	3.5	11.9	28.7	NA	NA	26.2	18.3

APPENDIX TABLE R-1.2

Distributions of Children Receiving Dental Care Services:
Category of Service by Medicaid Eligibility Group
1989 and 1992

Tennessee

Service Category	Medicaid Eligibility Group									
	AFDC Cash		Poverty related		Blind/ Disabled		Foster Care		Medically Needy/ Other	
	1989	1992	1989	1992	1989	1992	1989	1992	1989	1992
Any Dental Care	65.1	53.5	6.7	20.0	4.6	5.3	1.9	3.3	21.7	17.9
Any Diagnostic Services	65.8	54.1	6.6	19.9	4.5	5.2	1.9	3.3	21.2	17.4
Any Preventive Services	66.8	55.1	6.0	19.3	4.4	5.1	1.9	3.3	20.9	17.1
Any Therapeutic Services	61.7	50.4	7.1	20.7	4.3	5.0	1.8	3.4	25.1	20.6
Any Diagnostic, Preventive, or Therapeutic Services	65.2	53.6	6.7	20.1	4.6	5.2	1.9	3.3	21.6	17.8
Any Emergency Services	57.5	48.1	11.6	22.7	6.3	5.3	1.3	3.1	23.4	20.8
Any Orthodontic Services	60.1	55.2	0.7	1.3	5.2	6.5	3.6	6.6	30.4	30.1

APPENDIX TABLE R-1.3

Distributions of Children Receiving Dental Care Services: Category of Service by Gender 1989 and 1992

California

Service Category	Gender			
	Male		Female	
	1989	1992	1989	1992
Any Dental Care	47.2	47.2	52.8	52.8
Any Diagnostic Services	47.2	47.2	52.8	52.8
Any Preventive Services	43.1	43.8	56.9	56.2
Any Therapeutic Services	46.8	46.9	53.2	53.1
Any Diagnostic, Preventive, or Therapeutic Services	47.1	47.2	52.9	52.8
Any Emergency Services	44.6	43.4	55.4	56.6
Any Orthodontic Services	44.6	40.2	55.4	59.8

APPENDIX TABLE R-1.3

Distributions of Children Receiving Dental Care Services: Category of Service by Gender 1989 and 1992

Georgia

Service Category	Gender			
	Male		Female	
	1989	1992	1989	1992
Any Dental Care	45.2	45.7	54.8	54.3
Any Diagnostic Services	45.3	45.7	54.7	54.3
Any Preventive Services	46.3	46.6	53.7	53.4
Any Therapeutic Services	43.7	43.9	56.3	56.1
Any Diagnostic, Preventive, or Therapeutic Services	45.2	45.7	54.8	54.3
Any Emergency Services	39.6	41.5	60.4	58.5
Any Orthodontic Services	33.3	46.2	66.7	53.8

APPENDIX TABLE R-1.3

Distributions of Children Receiving Dental Care Services:
Category of Service by Gender
1989 and 1992

Michigan

Service Category	Gender			
	Male		Female	
	1989	1992	1989	1992
Any Dental Care	46.6	47.1	53.4	52.9
Any Diagnostic Services	46.6	47.2	53.4	52.8
Any Preventive Services	47.2	47.5	52.8	52.5
Any Therapeutic Services	45.7	46.4	54.3	53.6
Any Diagnostic, Preventive, or Therapeutic Services	46.6	47.1	53.4	52.9
Any Emergency Services	43.1	43.3	56.9	56.7
Any Orthodontic Services	51.2	49.6	48.8	50.4

APPENDIX TABLE R-1.3

Distributions of Children Receiving Dental Care Services:
Category of Service by Gender
1989 and 1992

Tennessee

Service Category	Gender			
	Male		Female	
	1989	1992	1989	1992
Any Dental Care	45.7	46.9	54.3	53.1
Any Diagnostic Services	45.8	47.0	54.2	53.0
Any Preventive Services	46.0	47.3	54.0	52.7
Any Therapeutic Services	55.5	46.0	44.5	54.0
Any Diagnostic, Preventive, or Therapeutic Services	45.8	47.0	54.2	53.0
Any Emergency Services	40.5	42.9	59.5	57.1
Any Orthodontic Services	37.1	37.8	62.9	62.2

APPENDIX TABLE R-1.4

Distributions of Children Receiving Dental Care Services:
Category of Service by Race/Ethnicity
1989 and 1992

California

Service Category	Race/Ethnicity			
	White		Nonwhite	
	1989	1992	1989	1992
Any Dental Care	35.4	32.8	61.7	65.7
Any Diagnostic Services	35.0	32.1	62.2	66.5
Any Preventive Services	34.2	31.7	61.3	66.6
Any Therapeutic Services	32.4	30.1	64.4	68.5
Any Diagnostic, Preventive, or Therapeutic Services	35.3	32.3	61.9	66.2
Any Emergency Services	35.4	34.1	60.9	63.2
Any Orthodontic Services	44.2	62.3	50.4	36.1

APPENDIX TABLE R-1.4

Distributions of Children Receiving Dental Care Services:
Category of Service by Race/Ethnicity
1989 and 1992

Georgia

Service Category	Race/Ethnicity			
	White		Nonwhite	
	1989	1992	1989	1992
Any Dental Care	28.6	36.7	71.0	62.3
Any Diagnostic Services	28.5	36.5	71.1	62.4
Any Preventive Services	28.0	36.2	71.6	62.8
Any Therapeutic Services	29.6	38.9	70.0	60.1
Any Diagnostic, Preventive, or Therapeutic Services	28.6	36.7	71.0	62.3
Any Emergency Services	31.9	45.1	67.6	53.3
Any Orthodontic Services	33.3	84.6	66.7	7.7

APPENDIX TABLE R-1.4

Distributions of Children Receiving Dental Care Services:
Category of Service by Race/Ethnicity
1989 and 1992

Michigan

Service Category	Race/Ethnicity			
	White		Nonwhite	
	1989	1992	1989	1992
Any Dental Care	61.9	65.0	37.5	34.2
Any Diagnostic Services	61.6	64.7	37.8	34.5
Any Preventive Services	61.6	64.6	37.8	34.6
Any Therapeutic Services	66.6	69.8	32.8	29.4
Any Diagnostic, Preventive, or Therapeutic Services	61.8	64.9	37.6	34.3
Any Emergency Services	67.5	70.6	31.9	28.4
Any Orthodontic Services	77.4	82.6	21.4	16.5

APPENDIX TABLE R-1.4

Distributions of Children Receiving Dental Care Services:
Category of Service by Race/Ethnicity
1989 and 1992

Tennessee

Service Category	Race/Ethnicity			
	White		Nonwhite	
	1989	1992	1989	1992
Any Dental Care	54.9	58.6	44.8	40.5
Any Diagnostic Services	53.9	57.8	45.8	41.4
Any Preventive Services	52.9	56.4	46.9	42.8
Any Therapeutic Services	63.0	67.0	36.7	32.2
Any Diagnostic, Preventive, or Therapeutic Services	54.7	58.4	45.0	40.7
Any Emergency Services	65.3	70.1	34.4	29.0
Any Orthodontic Services	75.1	76.4	24.4	22.7

APPENDIX TABLE R-1.5

Distributions of Children Receiving Dental Care Services:
Category of Service by Metro Status
1989 and 1992

California

Service Category	Metro Status					
	Urban		Suburban		Rural	
	1989	1992	1989	1992	1989	1992
Any Dental Care	60.7	74.1	33.7	20.3	5.7	5.6
Any Diagnostic Services	60.9	76.2	33.6	19.6	5.5	4.3
Any Preventive Services	64.6	81.5	30.9	15.2	4.5	3.3
Any Therapeutic Services	60.7	76.1	34.1	19.8	5.2	4.1
Any Diagnostic, Preventive, or Therapeutic Services	60.7	76.0	33.7	19.6	5.6	4.4
Any Emergency Services	59.5	74.5	35.7	21.4	4.8	4.1
Any Orthodontic Services	63.3	84.2	29.6	13.4	7.1	2.4

APPENDIX TABLE R-1.5

Distributions of Children Receiving Dental Care Services:
Category of Service by Metro Status
1989 and 1992

Georgia

Service Category	Metro Status					
	Urban		Suburban		Rural	
	1989	1992	1989	1992	1989	1992
Any Dental Care	11.6	19.5	38.2	33.8	50.3	46.6
Any Diagnostic Services	11.6	19.5	38.3	34.0	50.0	46.5
Any Preventive Services	11.1	19.3	38.8	34.4	50.1	46.3
Any Therapeutic Services	11.0	18.9	36.9	33.0	52.1	48.2
Any Diagnostic, Preventive, or Therapeutic Services	11.6	19.5	38.2	33.8	50.3	46.6
Any Emergency Services	16.5	23.5	35.4	31.6	48.1	44.9
Any Orthodontic Services	0.0	30.8	0.0	15.4	100.0	53.8

APPENDIX TABLE R-1.5

Distributions of Children Receiving Dental Care Services:
Category of Service by Metro Status
1989 and 1992

Michigan

Service Category	Metro Status					
	Urban		Suburban		Rural	
	1989	1992	1989	1992	1989	1992
Any Dental Care	26.4	33.6	49.1	40.1	24.5	26.2
Any Diagnostic Services	26.8	34.0	49.0	40.0	24.2	26.0
Any Preventive Services	26.9	34.3	49.1	40.2	23.9	25.6
Any Therapeutic Services	23.2	30.8	50.0	40.2	26.8	29.0
Any Diagnostic, Preventive, or Therapeutic Services	26.5	33.6	49.1	40.2	24.4	26.2
Any Emergency Services	22.7	31.5	52.2	40.8	25.1	27.8
Any Orthodontic Services	17.9	31.3	45.2	35.7	36.9	33.0

APPENDIX TABLE R-1.5

Distributions of Children Receiving Dental Care Services:
Category of Service by Metro Status
1989 and 1992

Tennessee

Service Category	Metro Status					
	Urban		Suburban		Rural	
	1989	1992	1989	1992	1989	1992
Any Dental Care	0.0	22.2	66.2	43.3	33.8	34.4
Any Diagnostic Services	0.0	22.9	66.8	43.1	33.2	34.0
Any Preventive Services	0.0	23.9	67.3	42.9	32.7	33.2
Any Therapeutic Services	0.0	15.0	61.3	46.0	38.7	39.1
Any Diagnostic, Preventive, or Therapeutic Services	0.0	22.4	66.2	43.2	33.8	34.4
Any Emergency Services	0.0	15.5	70.0	46.6	30.0	37.9
Any Orthodontic Services	0.0	8.2	65.0	55.7	35.0	36.2

APPENDIX TABLE R-3.1

Medicaid Children's Use of Diagnostic, Preventive and Therapeutic Services: by Age and Preventive Medical Care Status, 1989, California

Service Category	Dental Services in 1989						Preventive Medical Care Visit in 1989						No Preventive Medical Care Visit in 1989					
	All Children	< 12 mos.	1-2 yrs.	3-6 yrs.	7-12 yrs.	13-20 yrs.	All Children	< 12 mos.	1-2 yrs.	3-6 yrs.	7-12 yrs.	13-20 yrs.	All Children	< 12 mos.	1-2 yrs.	3-6 yrs.	7-12 yrs.	13-20 yrs.
Users of Diagnostic, Preventive or Therapeutic Services																		
Total Claims/User P.Y.E.	1.52	0.00	0.15	1.66	2.00	1.91	1.32	0.00	0.15	1.95	2.59	2.50	1.60	0.00	0.15	1.45	1.90	1.82
Total Payments/User P.Y.E.	23.62	0.09	2.28	23.54	27.85	35.39	20.09	0.10	2.28	27.74	36.09	46.10	25.23	0.08	2.29	20.59	26.42	33.64
Diagnostic Services (Claims/User P.Y.E.)	0.70	0.00	0.06	0.75	0.99	0.85	0.61	0.00	0.06	0.89	1.30	1.14	0.74	0.00	0.05	0.65	0.94	0.80
X-ray Only	0.54	0.00	0.03	0.55	0.79	0.65	0.46	0.00	0.03	0.65	1.01	0.85	0.58	0.00	0.03	0.49	0.75	0.62
Clinical Oral Exam	0.16	0.00	0.03	0.20	0.20	0.19	0.16	0.00	0.03	0.24	0.29	0.28	0.16	0.00	0.03	0.17	0.19	0.18
Other	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Preventive Dental Services (Claims/User P.Y.E.)	0.06	0.00	0.00	0.03	0.05	0.13	0.04	0.00	0.00	0.04	0.07	0.17	0.07	0.00	0.00	0.03	0.05	0.13
Prophylaxis/Cleaning	0.05	0.00	0.00	0.02	0.04	0.13	0.04	0.00	0.00	0.02	0.05	0.17	0.06	0.00	0.00	0.02	0.03	0.13
Topical Application of Fluoride	0.16	0.00	0.02	0.20	0.26	0.11	0.14	0.00	0.02	0.23	0.34	0.16	0.16	0.00	0.02	0.17	0.25	0.11
Sealants	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Other	0.01	0.00	0.00	0.01	0.02	0.00	0.01	0.00	0.00	0.01	0.02	0.00	0.01	0.00	0.00	0.01	0.02	0.00
Therapeutic Services (Claims/User P.Y.E.)	0.75	0.00	0.09	0.88	0.95	0.93	0.67	0.00	0.09	1.03	1.22	1.19	0.79	0.00	0.09	0.77	0.91	0.89
Restoration of Carious Lesions	0.49	0.00	0.02	0.48	0.61	0.72	0.41	0.00	0.02	0.57	0.79	0.93	0.53	0.00	0.02	0.42	0.58	0.68
Crowns	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06
Endodontics	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Periodontics	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Prosthodontics	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Oral Surgery	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13

APPENDIX TABLE R-3.1

Medicaid Children's Use of Diagnostic, Preventive and Therapeutic Services: by Age and Preventive Medical Care Status, 1992, California

Service Category	Dental Services in 1989						Preventive Medical Care Visit in 1992						No Preventive Medical Care Visit in 1992					
	All Children	< 12 mos.	1-2 yrs.	3-6 yrs.	7-12 yrs.	13-20 yrs.	All Children	< 12 mos.	1-2 yrs.	3-6 yrs.	7-12 yrs.	13-20 yrs.	All Children	< 12 mos.	1-2 yrs.	3-6 yrs.	7-12 yrs.	13-20 yrs.
Users of Diagnostic, Preventive or Therapeutic Services																		
Total Claims/User P.Y.E.	1.65	0.01	0.16	1.77	2.23	2.19	1.47	0.00	0.15	2.26	3.16	3.11	1.74	0.01	0.17	1.48	2.08	2.04
Total Payments/User P.Y.E.	41.82	0.16	3.91	38.71	48.61	68.42	35.48	0.13	3.69	49.05	68.85	95.36	44.71	0.24	4.34	32.49	45.27	64.09
Diagnostic Services (Claims/User P.Y.E.)	0.70	0.00	0.06	0.76	1.01	0.85	0.63	0.00	0.06	0.99	1.45	1.23	0.73	0.00	0.06	0.62	0.94	0.79
X-ray Only	0.52	0.00	0.03	0.54	0.79	0.64	0.46	0.00	0.03	0.70	1.11	0.90	0.55	0.00	0.03	0.45	0.74	0.59
Clinical Oral Exam	0.17	0.00	0.03	0.22	0.22	0.21	0.18	0.00	0.03	0.29	0.34	0.32	0.17	0.00	0.03	0.17	0.20	0.19
Other	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.01
Preventive Dental Services (Claims/User P.Y.E.)	0.06	0.00	0.00	0.03	0.06	0.13	0.05	0.00	0.00	0.04	0.08	0.19	0.07	0.00	0.00	0.03	0.05	0.13
Prophylaxis/Cleaning	0.05	0.00	0.00	0.02	0.04	0.13	0.04	0.00	0.00	0.03	0.05	0.19	0.06	0.00	0.00	0.02	0.04	0.13
Topical Application of Fluoride	0.14	0.00	0.02	0.19	0.25	0.10	0.14	0.00	0.02	0.25	0.36	0.15	0.15	0.00	0.02	0.15	0.23	0.09
Sealants	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Other	0.01	0.00	0.00	0.01	0.02	0.00	0.01	0.00	0.00	0.01	0.03	0.00	0.01	0.00	0.00	0.01	0.02	0.00
Therapeutic Services (Claims/User P.Y.E.)	0.90	0.00	0.09	0.98	1.16	1.21	0.79	0.00	0.09	1.23	1.63	1.69	0.94	0.00	0.10	0.83	1.08	1.13
Restoration of Carious Lesions	0.60	0.00	0.03	0.55	0.76	0.94	0.51	0.00	0.02	0.71	1.07	1.35	0.64	0.00	0.03	0.46	0.71	0.87
Crowns	0.06	0.00	0.02	0.13	0.04	0.06	0.07	0.00	0.02	0.16	0.06	0.07	0.06	0.00	0.03	0.11	0.04	0.05
Endodontics	0.06	0.00	0.02	0.12	0.07	0.05	0.07	0.00	0.02	0.15	0.10	0.07	0.06	0.00	0.02	0.11	0.06	0.05
Periodontics	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.01
Prosthodontics	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.01
Oral Surgery	0.14	0.00	0.02	0.15	0.26	0.13	0.12	0.00	0.02	0.18	0.36	0.15	0.15	0.00	0.02	0.13	0.24	0.12

APPENDIX TABLE R-3.1

Medicaid Children's Use of Diagnostic, Preventive and Therapeutic Services: by Age and Preventive Medical Care Status, 1989, Georgia

Service Category	Dental Services in 1989						Preventive Medical Care Visit in 1989						No Preventive Medical Care Visit in 1989					
	All Children	< 12 mos.	1-2 yrs.	3-6 yrs.	7-12 yrs.	13-20 yrs.	All Children	< 12 mos.	1-2 yrs.	3-6 yrs.	7-12 yrs.	13-20 yrs.	All Children	< 12 mos.	1-2 yrs.	3-6 yrs.	7-12 yrs.	13-20 yrs.
Users of Diagnostic, Preventive or Therapeutic Services																		
Total Claims/User P.Y.E.	2.04	0.00	0.14	2.22	2.76	2.66	2.62	0.00	0.15	3.26	4.35	4.49	1.81	0.00	0.13	1.67	2.34	2.28
Total Payments/User P.Y.E.	43.91	0.07	3.52	46.07	54.51	63.77	54.38	0.05	3.73	65.98	84.95	102.72	39.78	0.09	3.35	35.65	46.49	55.68
Diagnostic Services (Claims/User P.Y.E.)	0.86	0.00	0.06	0.95	1.21	1.06	1.12	0.00	0.07	1.43	1.90	1.79	0.76	0.00	0.06	0.71	1.02	0.91
X-ray Only	0.40	0.00	0.01	0.40	0.58	0.52	0.50	0.00	0.01	0.57	0.90	0.87	0.36	0.00	0.01	0.31	0.49	0.45
Clinical Oral Exam	0.42	0.00	0.03	0.50	0.59	0.48	0.57	0.00	0.04	0.78	0.94	0.85	0.36	0.00	0.03	0.35	0.49	0.41
Other	0.04	0.00	0.01	0.06	0.04	0.06	0.05	0.00	0.01	0.08	0.06	0.07	0.04	0.00	0.01	0.05	0.04	0.06
Preventive Dental Services (Claims/User P.Y.E.)	0.42	0.00	0.03	0.50	0.61	0.45	0.57	0.00	0.03	0.78	0.97	0.81	0.36	0.00	0.02	0.36	0.52	0.37
Prophylaxis/Cleaning	0.41	0.00	0.03	0.49	0.59	0.45	0.56	0.00	0.03	0.76	0.95	0.81	0.35	0.00	0.02	0.34	0.50	0.37
Topical Application of Fluoride	0.36	0.00	0.02	0.44	0.56	0.36	0.50	0.00	0.03	0.68	0.90	0.68	0.31	0.00	0.02	0.31	0.47	0.29
Sealants	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Other	0.01	0.00	0.00	0.01	0.02	0.00	0.01	0.00	0.00	0.01	0.03	0.00	0.01	0.00	0.00	0.01	0.02	0.00
Therapeutic Services (Claims/User P.Y.E.)	0.76	0.00	0.05	0.77	0.94	1.15	0.93	0.00	0.05	1.06	1.47	1.88	0.69	0.00	0.05	0.61	0.79	1.00
Restoration of Carious Lesions	0.51	0.00	0.02	0.47	0.63	0.83	0.65	0.00	0.02	0.69	1.03	1.45	0.46	0.00	0.02	0.35	0.52	0.70
Crowns	0.05	0.00	0.01	0.10	0.06	0.04	0.07	0.00	0.01	0.13	0.08	0.06	0.05	0.00	0.01	0.09	0.05	0.04
Endodontics	0.05	0.00	0.01	0.08	0.06	0.06	0.06	0.00	0.01	0.09	0.08	0.09	0.05	0.00	0.01	0.07	0.05	0.06
Periodontics	0.01	0.00	0.00	0.00	0.00	0.03	0.01	0.00	0.00	0.00	0.01	0.06	0.01	0.00	0.00	0.00	0.00	0.03
Prosthodontics	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.01
Oral Surgery	0.13	0.00	0.01	0.11	0.19	0.16	0.13	0.00	0.01	0.14	0.27	0.21	0.12	0.00	0.02	0.10	0.16	0.15

APPENDIX TABLE R-3.1

Medicaid Children's Use of Diagnostic, Preventive and Therapeutic Services: by Age and Preventive Medical Care Status, 1992, Georgia

Service Category	Dental Services in 1989						Preventive Medical Care Visit in 1992						No Preventive Medical Care Visit in 1992					
	All Children	< 12 mos.	1-2 yrs.	3-6 yrs.	7-12 yrs.	13-20 yrs.	All Children	< 12 mos.	1-2 yrs.	3-6 yrs.	7-12 yrs.	13-20 yrs.	All Children	< 12 mos.	1-2 yrs.	3-6 yrs.	7-12 yrs.	13-20 yrs.
Users of Diagnostic, Preventive or Therapeutic Services																		
Total Claims/User P.Y.E.	1.99	0.00	0.14	2.37	2.86	2.65	2.04	0.00	0.15	3.18	4.17	4.09	1.97	0.00	0.14	1.95	2.58	2.43
Total Payments/User P.Y.E.	45.39	0.07	3.75	52.86	60.38	67.16	44.26	0.06	3.61	67.87	86.18	97.73	45.89	0.08	3.90	44.99	54.94	62.37
Diagnostic Services (Claims/User P.Y.E.)	0.85	0.00	0.06	1.02	1.26	1.07	0.89	0.00	0.07	1.42	1.86	1.66	0.83	0.00	0.06	0.81	1.14	0.97
X-ray Only	0.38	0.00	0.01	0.42	0.60	0.52	0.38	0.00	0.01	0.56	0.89	0.79	0.38	0.00	0.01	0.34	0.54	0.47
Clinical Oral Exam	0.41	0.00	0.04	0.53	0.60	0.47	0.46	0.00	0.04	0.77	0.89	0.78	0.38	0.00	0.03	0.40	0.53	0.42
Other	0.06	0.00	0.01	0.08	0.06	0.08	0.05	0.00	0.01	0.09	0.08	0.09	0.06	0.00	0.01	0.07	0.06	0.08
Preventive Dental Services (Claims/User P.Y.E.)	0.41	0.00	0.03	0.53	0.62	0.45	0.45	0.00	0.03	0.75	0.93	0.76	0.39	0.00	0.02	0.41	0.56	0.40
Prophylaxis/Cleaning	0.39	0.00	0.03	0.51	0.60	0.45	0.44	0.00	0.03	0.73	0.90	0.76	0.37	0.00	0.02	0.39	0.53	0.40
Topical Application of Fluoride	0.36	0.00	0.02	0.46	0.57	0.38	0.40	0.00	0.02	0.66	0.86	0.67	0.34	0.00	0.02	0.36	0.51	0.34
Sealants	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Other	0.01	0.00	0.00	0.02	0.03	0.00	0.01	0.00	0.00	0.02	0.03	0.00	0.01	0.00	0.00	0.02	0.03	0.00
Therapeutic Services (Claims/User P.Y.E.)	0.73	0.00	0.05	0.83	0.97	1.14	0.69	0.00	0.05	1.01	1.38	1.67	0.75	0.00	0.06	0.73	0.88	1.05
Restoration of Carious Lesions	0.45	0.00	0.01	0.45	0.60	0.77	0.43	0.00	0.01	0.57	0.89	1.22	0.46	0.00	0.01	0.38	0.53	0.70
Crowns	0.06	0.00	0.01	0.12	0.07	0.04	0.06	0.00	0.01	0.14	0.08	0.05	0.06	0.00	0.01	0.11	0.06	0.04
Endodontics	0.06	0.00	0.01	0.10	0.08	0.08	0.06	0.00	0.01	0.11	0.10	0.10	0.07	0.00	0.01	0.09	0.07	0.07
Periodontics	0.01	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.04	0.01	0.00	0.00	0.00	0.00	0.02
Prosthodontics	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.01
Oral Surgery	0.12	0.00	0.02	0.12	0.19	0.18	0.10	0.00	0.01	0.13	0.24	0.19	0.14	0.00	0.02	0.12	0.18	0.18

APPENDIX TABLE R-3.1

Medicaid Children's Use of Diagnostic, Preventive and Therapeutic Services: by Age and Preventive Medical Care Status, 1989, Michigan

Service Category	Dental Services in 1989						Preventive Medical Care Visit in 1989						No Preventive Medical Care Visit in 1989					
	All Children	< 12 mos.	1-2 yrs.	3-6 yrs.	7-12 yrs.	13-20 yrs.	All Children	< 12 mos.	1-2 yrs.	3-6 yrs.	7-12 yrs.	13-20 yrs.	All Children	< 12 mos.	1-2 yrs.	3-6 yrs.	7-12 yrs.	13-20 yrs.
Users of Diagnostic, Preventive or Therapeutic Services																		
Total Claims/User P.Y.E.	1.64	0.00	0.09	1.82	2.29	1.92	1.61	0.00	0.09	2.18	2.87	2.65	1.66	0.00	0.10	1.55	2.13	1.77
Total Payments/User P.Y.E.	25.52	0.14	1.97	26.66	32.91	33.10	24.17	0.18	1.97	31.57	40.84	43.69	26.18	0.04	1.97	23.13	30.66	30.94
Diagnostic Services (Claims/User P.Y.E.)	0.71	0.00	0.04	0.81	1.01	0.78	0.71	0.00	0.04	0.99	1.28	1.10	0.71	0.00	0.04	0.68	0.94	0.72
X-ray Only	0.34	0.00	0.01	0.35	0.49	0.40	0.33	0.00	0.01	0.42	0.62	0.55	0.34	0.00	0.01	0.30	0.46	0.37
Clinical Oral Exam	0.37	0.00	0.02	0.46	0.52	0.39	0.38	0.00	0.02	0.57	0.66	0.55	0.36	0.00	0.02	0.38	0.48	0.35
Other	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Preventive Dental Services (Claims/User P.Y.E.)	0.36	0.00	0.01	0.45	0.53	0.37	0.37	0.00	0.01	0.55	0.68	0.54	0.36	0.00	0.01	0.37	0.49	0.33
Prophylaxis/Cleaning	0.36	0.00	0.01	0.44	0.52	0.37	0.37	0.00	0.01	0.55	0.67	0.54	0.35	0.00	0.01	0.36	0.48	0.33
Topical Application of Fluoride	0.21	0.00	0.01	0.28	0.34	0.17	0.23	0.00	0.01	0.35	0.45	0.27	0.20	0.00	0.01	0.23	0.31	0.15
Sealants	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Other	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.00
Therapeutic Services (Claims/User P.Y.E.)	0.57	0.00	0.05	0.56	0.75	0.76	0.52	0.00	0.05	0.64	0.91	1.01	0.60	0.00	0.05	0.51	0.70	0.71
Restoration of Carious Lesions	0.47	0.00	0.02	0.43	0.61	0.65	0.43	0.00	0.02	0.49	0.75	0.89	0.49	0.00	0.02	0.39	0.57	0.60
Crowns	0.02	0.00	0.01	0.04	0.02	0.01	0.02	0.00	0.01	0.04	0.02	0.01	0.01	0.00	0.01	0.03	0.02	0.01
Endodontics	0.02	0.00	0.01	0.04	0.03	0.01	0.02	0.00	0.01	0.05	0.03	0.01	0.02	0.00	0.01	0.04	0.03	0.01
Periodontics	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Prosthodontics	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Oral Surgery	0.07	0.00	0.01	0.05	0.09	0.09	0.06	0.00	0.01	0.06	0.11	0.10	0.07	0.00	0.01	0.05	0.09	0.09

APPENDIX TABLE R-3.1

Medicaid Children's Use of Diagnostic, Preventive and Therapeutic Services: by Age and Preventive Medical Care Status, 1992, Michigan

Service Category	Dental Services in 1989						Preventive Medical Care Visit in 1992						No Preventive Medical Care Visit in 1992					
	All Children	< 12 mos.	1-2 yrs.	3-6 yrs.	7-12 yrs.	13-20 yrs.	All Children	< 12 mos.	1-2 yrs.	3-6 yrs.	7-12 yrs.	13-20 yrs.	All Children	< 12 mos.	1-2 yrs.	3-6 yrs.	7-12 yrs.	13-20 yrs.
Users of Diagnostic, Preventive or Therapeutic Services																		
Total Claims/User P.Y.E.	1.66	0.00	0.09	1.86	2.48	2.01	1.49	0.00	0.08	2.22	3.17	2.76	1.76	0.00	0.10	1.53	2.31	1.87
Total Payments/User P.Y.E.	27.65	0.17	1.91	30.77	37.64	36.84	24.32	0.18	1.89	36.43	47.36	47.94	29.58	0.16	1.94	25.62	35.31	34.72
Diagnostic Services (Claims/User P.Y.E.)	0.70	0.00	0.04	0.82	1.04	0.81	0.65	0.00	0.03	0.99	1.35	1.14	0.73	0.00	0.04	0.66	0.97	0.75
X-ray Only	0.32	0.00	0.01	0.34	0.49	0.40	0.28	0.00	0.01	0.39	0.63	0.55	0.35	0.00	0.01	0.29	0.46	0.37
Clinical Oral Exam	0.38	0.00	0.02	0.48	0.55	0.41	0.37	0.00	0.02	0.60	0.72	0.60	0.38	0.00	0.03	0.38	0.51	0.38
Other	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Preventive Dental Services (Claims/User P.Y.E.)	0.43	0.00	0.01	0.47	0.72	0.46	0.40	0.00	0.01	0.58	0.95	0.69	0.45	0.00	0.01	0.38	0.67	0.41
Prophylaxis/Cleaning	0.36	0.00	0.01	0.46	0.54	0.39	0.35	0.00	0.01	0.57	0.71	0.57	0.37	0.00	0.01	0.36	0.50	0.35
Topical Application of Fluoride	0.21	0.00	0.01	0.28	0.35	0.17	0.21	0.00	0.01	0.35	0.46	0.28	0.21	0.00	0.01	0.23	0.32	0.15
Sealants	0.07	0.00	0.00	0.01	0.18	0.07	0.05	0.00	0.00	0.01	0.24	0.12	0.08	0.00	0.00	0.02	0.16	0.06
Other	0.07	0.00	0.00	0.02	0.18	0.07	0.05	0.00	0.00	0.01	0.25	0.12	0.08	0.00	0.00	0.02	0.17	0.06
Therapeutic Services (Claims/User P.Y.E.)	0.53	0.00	0.04	0.56	0.71	0.74	0.45	0.00	0.04	0.65	0.86	0.93	0.58	0.00	0.04	0.49	0.68	0.71
Restoration of Carious Lesions	0.43	0.00	0.02	0.43	0.57	0.63	0.36	0.00	0.02	0.50	0.70	0.82	0.47	0.00	0.02	0.36	0.54	0.59
Crowns	0.02	0.00	0.00	0.04	0.02	0.01	0.02	0.00	0.00	0.04	0.02	0.01	0.01	0.00	0.00	0.03	0.02	0.01
Endodontics	0.02	0.00	0.00	0.04	0.03	0.01	0.02	0.00	0.00	0.05	0.04	0.01	0.02	0.00	0.00	0.04	0.03	0.01
Periodontics	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Prosthodontics	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Oral Surgery	0.07	0.00	0.01	0.06	0.10	0.09	0.05	0.00	0.01	0.06	0.11	0.09	0.08	0.00	0.01	0.05	0.09	0.09

APPENDIX TABLE R-3.1

Medicaid Children's Use of Diagnostic, Preventive and Therapeutic Services:
by Age and Preventive Medical Care Status, 1989, Tennessee

Service Category	Dental Services in 1989						Preventive Medical Care Visit in 1989						No Preventive Medical Care Visit in 1989					
	All Children	< 12 mos.	1-2 yrs.	3-6 yrs.	7-12 yrs.	13-20 yrs.	All Children	< 12 mos.	1-2 yrs.	3-6 yrs.	7-12 yrs.	13-20 yrs.	All Children	< 12 mos.	1-2 yrs.	3-6 yrs.	7-12 yrs.	13-20 yrs.
Users of Diagnostic, Preventive or Therapeutic Services																		
Total Claims/User P.Y.E.	2.45	0.02	0.19	2.43	3.72	3.15	1.97	0.01	0.17	2.95	4.85	4.75	2.63	0.03	0.22	2.15	3.56	2.99
Total Payments/User P.Y.E.	40.11	0.24	3.78	41.05	52.73	57.25	32.70	0.13	3.31	49.93	71.82	84.73	42.86	0.46	4.35	36.17	50.13	54.52
Diagnostic Services (Claims/User P.Y.E.)	1.23	0.01	0.08	1.14	2.02	1.51	0.95	0.01	0.07	1.37	2.55	2.27	1.33	0.01	0.09	1.01	1.95	1.43
X-ray Only	0.81	0.00	0.02	0.66	1.37	1.07	0.58	0.00	0.02	0.78	1.68	1.54	0.90	0.01	0.03	0.60	1.32	1.02
Clinical Oral Exam	0.41	0.00	0.06	0.47	0.65	0.44	0.37	0.00	0.05	0.60	0.87	0.73	0.43	0.00	0.06	0.41	0.63	0.41
Other	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Preventive Dental Services (Claims/User P.Y.E.)	0.40	0.00	0.04	0.44	0.65	0.42	0.35	0.00	0.03	0.55	0.87	0.72	0.41	0.00	0.04	0.38	0.62	0.39
Prophylaxis/Cleaning	0.39	0.00	0.04	0.44	0.65	0.42	0.35	0.00	0.03	0.55	0.86	0.72	0.41	0.00	0.04	0.38	0.62	0.39
Topical Application of Fluoride	0.35	0.00	0.04	0.41	0.61	0.34	0.31	0.00	0.03	0.50	0.80	0.58	0.37	0.00	0.04	0.35	0.59	0.32
Sealants	0.30	0.00	0.00	0.06	0.88	0.22	0.16	0.00	0.00	0.05	1.01	0.33	0.36	0.00	0.00	0.07	0.87	0.21
Other	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.00
Therapeutic Services (Claims/User P.Y.E.)	0.83	0.01	0.08	0.85	1.04	1.22	0.67	0.00	0.07	1.02	1.43	1.76	0.89	0.01	0.09	0.75	0.99	1.17
Restoration of Carious Lesions	0.52	0.00	0.01	0.38	0.65	0.92	0.38	0.00	0.01	0.48	0.90	1.36	0.57	0.01	0.02	0.32	0.62	0.87
Crowns	0.10	0.00	0.04	0.25	0.11	0.03	0.12	0.00	0.03	0.30	0.15	0.03	0.09	0.00	0.04	0.23	0.10	0.03
Endodontics	0.08	0.00	0.02	0.14	0.09	0.08	0.08	0.00	0.02	0.16	0.10	0.10	0.08	0.00	0.02	0.12	0.09	0.07
Periodontics	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.01
Prosthodontics	0.01	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.01
Oral Surgery	0.12	0.00	0.01	0.08	0.19	0.17	0.08	0.00	0.00	0.08	0.27	0.22	0.13	0.00	0.01	0.07	0.18	0.16

APPENDIX TABLE R-3.1

Medicaid Children's Use of Diagnostic, Preventive and Therapeutic Services: by Age and Preventive Medical Care Status, 1992, Tennessee

Service Category	Dental Services in 1989						Preventive Medical Care Visit in 1992						No Preventive Medical Care Visit in 1992					
	All Children	< 12 mos.	1-2 yrs.	3-6 yrs.	7-12 yrs.	13-20 yrs.	All Children	< 12 mos.	1-2 yrs.	3-6 yrs.	7-12 yrs.	13-20 yrs.	All Children	< 12 mos.	1-2 yrs.	3-6 yrs.	7-12 yrs.	13-20 yrs.
Users of Diagnostic, Preventive or Therapeutic Services																		
Total Claims/User P.Y.E.	2.24	0.01	0.28	2.33	3.49	2.88	1.71	0.01	0.24	2.78	4.36	4.01	2.48	0.02	0.34	2.04	3.37	2.76
Total Payments/User P.Y.E.	40.47	0.18	5.61	42.47	54.96	58.89	31.31	0.13	4.87	51.13	70.72	79.81	44.64	0.32	6.82	36.94	52.78	56.75
Diagnostic Services (Claims/User P.Y.E.)	1.03	0.01	0.10	0.99	1.72	1.30	0.75	0.01	0.09	1.17	2.06	1.79	1.15	0.01	0.13	0.88	1.68	1.25
X-ray Only	0.59	0.00	0.02	0.48	1.03	0.83	0.38	0.00	0.02	0.56	1.19	1.09	0.68	0.00	0.02	0.44	1.01	0.80
Clinical Oral Exam	0.44	0.00	0.08	0.51	0.70	0.46	0.36	0.00	0.07	0.62	0.87	0.70	0.47	0.01	0.10	0.44	0.67	0.44
Other	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Preventive Dental Services (Claims/User P.Y.E.)	0.42	0.00	0.07	0.49	0.70	0.44	0.35	0.00	0.05	0.59	0.87	0.68	0.46	0.00	0.09	0.43	0.67	0.42
Prophylaxis/Cleaning	0.42	0.00	0.07	0.49	0.69	0.44	0.35	0.00	0.05	0.58	0.86	0.68	0.45	0.00	0.09	0.43	0.67	0.42
Topical Application of Fluoride	0.37	0.00	0.06	0.44	0.64	0.36	0.31	0.00	0.05	0.53	0.80	0.56	0.40	0.00	0.08	0.38	0.62	0.34
Sealants	0.32	0.00	0.00	0.07	1.00	0.27	0.14	0.00	0.00	0.05	0.99	0.37	0.41	0.00	0.00	0.08	1.00	0.25
Other	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.00
Therapeutic Services (Claims/User P.Y.E.)	0.79	0.00	0.11	0.84	1.07	1.14	0.62	0.00	0.09	1.02	1.43	1.54	0.87	0.01	0.13	0.73	1.02	1.10
Restoration of Carious Lesions	0.45	0.00	0.02	0.36	0.62	0.79	0.32	0.00	0.02	0.45	0.86	1.14	0.51	0.00	0.02	0.30	0.59	0.75
Crowns	0.12	0.00	0.05	0.26	0.12	0.03	0.14	0.00	0.05	0.32	0.15	0.05	0.11	0.00	0.06	0.23	0.11	0.03
Endodontics	0.10	0.00	0.03	0.15	0.11	0.10	0.09	0.00	0.02	0.17	0.13	0.12	0.10	0.00	0.03	0.13	0.11	0.10
Periodontics	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.02	0.01	0.00	0.00	0.00	0.00	0.02
Prosthodontics	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.01
Oral Surgery	0.12	0.00	0.01	0.08	0.22	0.19	0.07	0.00	0.01	0.08	0.29	0.21	0.15	0.00	0.01	0.08	0.21	0.19

APPENDIX TABLE R-3.2

Medicaid Children's Use of Diagnostic, Preventive and Therapeutic Services: by Eligibility Group and Preventive Medical Care Status, 1989 California

Service Category	Dental Services in 1992						Preventive Medical Care Visits in 1989						Non Preventive Medical Care Visits in 1989					
	All Children	AFDC	Poverty Related	Blind/ Disabled	Foster Care	Medically Needy/ Other	All Children	AFDC	Poverty Related	Blind/ Disabled	Foster Care	Medically Needy/ Other	All Children	AFDC	Poverty Related	Blind/ Disabled	Foster Care	Medically Needy/ Other
Users of Diagnostic, Preventive or Therapeutic Services																		
Total Claims/User P.Y.E.	1.52	1.46	0.07	1.39	1.67	1.69	1.32	1.23	0.03	1.56	1.87	1.57	1.60	1.58	0.09	1.36	1.55	1.74
Total Payments/User P.Y.E.	23.62	22.16	1.14	24.41	24.32	28.68	20.09	18.11	0.55	25.77	25.80	26.46	25.23	24.10	1.50	24.12	23.35	29.48
Diagnostic Services (Claims/User P.Y.E.)	0.70	0.69	0.03	0.62	0.93	0.72	0.61	0.57	0.01	0.70	1.09	0.65	0.74	0.75	0.04	0.60	0.82	0.74
X-ray Only	0.54	0.54	0.02	0.46	0.68	0.54	0.46	0.43	0.01	0.51	0.78	0.48	0.58	0.59	0.03	0.45	0.62	0.57
Clinical Oral Exam	0.16	0.15	0.01	0.15	0.24	0.18	0.16	0.14	0.00	0.18	0.31	0.18	0.16	0.16	0.01	0.14	0.20	0.17
Other	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00
Preventive Dental Services (Claims/User P.Y.E.)	0.08	0.05	0.01	0.10	0.07	0.09	0.04	0.03	0.00	0.08	0.07	0.06	0.07	0.06	0.01	0.11	0.07	0.09
Prophylaxis/Cleaning	0.05	0.04	0.01	0.10	0.06	0.08	0.04	0.03	0.00	0.08	0.06	0.05	0.06	0.05	0.01	0.10	0.06	0.08
Topical Application of Fluoride	0.16	0.16	0.00	0.11	0.22	0.13	0.14	0.14	0.00	0.17	0.25	0.13	0.16	0.17	0.00	0.10	0.20	0.13
Sealants	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Other	0.01	0.01	0.00	0.00	0.00	0.01	0.01	0.01	0.00	0.00	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.01
Therapeutic Services (Claims/User P.Y.E.)	0.75	0.72	0.03	0.67	0.68	0.89	0.67	0.62	0.01	0.78	0.71	0.85	0.79	0.77	0.04	0.65	0.66	0.90
Restoration of Carious Lesions	0.49	0.46	0.03	0.35	0.49	0.61	0.41	0.37	0.01	0.37	0.51	0.56	0.53	0.51	0.03	0.35	0.48	0.63
Crowns	0.06	0.06	0.00	0.05	0.03	0.06	0.07	0.07	0.00	0.09	0.04	0.07	0.05	0.05	0.00	0.05	0.03	0.05
Endodontics	0.05	0.05	0.00	0.03	0.03	0.06	0.06	0.06	0.00	0.05	0.04	0.07	0.05	0.05	0.00	0.02	0.03	0.05
Periodontics	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.00
Prosthodontics	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00
Oral Surgery	0.13	0.13	0.00	0.15	0.10	0.14	0.11	0.10	0.00	0.16	0.10	0.13	0.14	0.14	0.01	0.15	0.10	0.14

APPENDIX TABLE R-3.2

Medicaid Children's Use of Diagnostic, Preventive and Therapeutic Services:
by Eligibility Group and Preventive Medical Care Status, 1992
California

Service Category	Dental Services in 1992						Preventive Medical Care Visits in 1992						Non Preventive Medical Care Visits in 1992					
	All Children	AFDC	Poverty Related	Blind/ Disabled	Foster Care	Medically Needy/ Other	All Children	AFDC	Poverty Related	Blind/ Disabled	Foster Care	Medically Needy/ Other	All Children	AFDC	Poverty Related	Blind/ Disabled	Foster Care	Medically Needy/ Other
Users of Diagnostic, Preventive or Therapeutic Services																		
Total Claims/User P.Y.E.	1.65	1.76	0.71	1.71	2.25	1.47	1.47	1.48	0.55	1.79	2.69	1.35	1.74	1.90	0.87	1.69	1.93	1.50
Total Payments/User P.Y.E.	41.82	43.18	16.35	49.24	50.39	40.12	35.48	35.30	12.56	47.58	58.75	35.21	44.71	47.24	20.24	49.64	44.41	41.66
Diagnostic Services (Claims/User P.Y.E.)	0.70	0.76	0.27	0.69	1.17	0.57	0.63	0.63	0.22	0.76	1.44	0.54	0.73	0.82	0.33	0.68	0.98	0.58
X-ray Only	0.52	0.57	0.19	0.51	0.85	0.42	0.46	0.46	0.15	0.53	1.02	0.38	0.55	0.63	0.23	0.50	0.73	0.44
Clinical Oral Exam	0.17	0.18	0.09	0.18	0.31	0.15	0.18	0.17	0.07	0.22	0.41	0.15	0.17	0.19	0.10	0.17	0.24	0.15
Other	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.01	0.01	0.00
Preventive Dental Services (Claims/User P.Y.E.)	0.06	0.06	0.01	0.09	0.08	0.07	0.05	0.04	0.01	0.07	0.10	0.05	0.07	0.06	0.02	0.10	0.07	0.07
Prophylaxis/Cleaning	0.05	0.05	0.01	0.09	0.08	0.06	0.04	0.03	0.01	0.07	0.09	0.05	0.06	0.06	0.01	0.09	0.07	0.07
Topical Application of Fluoride	0.14	0.16	0.07	0.12	0.26	0.10	0.14	0.14	0.05	0.17	0.31	0.10	0.15	0.17	0.08	0.11	0.22	0.10
Sealants	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Other	0.01	0.01	0.00	0.00	0.01	0.01	0.01	0.01	0.00	0.01	0.01	0.00	0.01	0.01	0.01	0.00	0.00	0.01
Therapeutic Services (Claims/User P.Y.E.)	0.90	0.95	0.42	0.92	0.99	0.83	0.79	0.81	0.32	0.96	1.15	0.76	0.94	1.02	0.53	0.91	0.88	0.85
Restoration of Carious Lesions	0.60	0.62	0.23	0.52	0.74	0.58	0.51	0.50	0.18	0.49	0.87	0.52	0.64	0.69	0.29	0.53	0.65	0.59
Crowns	0.06	0.07	0.06	0.07	0.04	0.05	0.07	0.08	0.05	0.09	0.05	0.06	0.06	0.06	0.07	0.06	0.04	0.05
Endodontics	0.06	0.07	0.06	0.05	0.05	0.06	0.07	0.07	0.04	0.06	0.05	0.06	0.06	0.07	0.07	0.04	0.04	0.05
Periodontics	0.00	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.00
Prosthodontics	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00
Oral Surgery	0.14	0.16	0.06	0.18	0.13	0.12	0.12	0.13	0.04	0.19	0.14	0.10	0.15	0.18	0.08	0.17	0.13	0.13

APPENDIX TABLE R-3.2

Medicaid Children's Use of Diagnostic, Preventive and Therapeutic Services:
by Eligibility Group and Preventive Medical Care Status, 1989
Georgia

Service Category	Dental Services in 1992						Preventive Medical Care Visits in 1989						Non Preventive Medical Care Visits in 1989					
	All Children	AFDC	Poverty Related	Blind/ Disabled	Foster Care	Medically Needy/ Other	All Children	AFDC	Poverty Related	Blind/ Disabled	Foster Care	Medically Needy/ Other	All Children	AFDC	Poverty Related	Blind/ Disabled	Foster Care	Medically Needy/ Other
Users of Diagnostic, Preventive or Therapeutic Services																		
Total Claims/User P.Y.E.	2.04	2.08	0.82	2.16	3.08	2.26	2.62	2.65	0.97	3.42	3.70	2.99	1.81	1.86	0.77	1.85	2.74	1.99
Total Payments/User P.Y.E.	43.91	44.57	20.19	49.52	60.68	49.29	54.38	54.64	24.13	74.28	72.74	63.15	39.78	40.51	18.66	43.36	54.15	44.21
Diagnostic Services (Claims/User P.Y.E.)	0.86	0.88	0.33	0.90	1.40	0.91	1.12	1.14	0.37	1.43	1.67	1.20	0.76	0.78	0.32	0.76	1.25	0.80
X-ray Only	0.40	0.41	0.15	0.38	0.62	0.42	0.50	0.51	0.15	0.57	0.72	0.55	0.36	0.37	0.15	0.31	0.57	0.37
Clinical Oral Exam	0.42	0.43	0.15	0.46	0.73	0.44	0.57	0.58	0.19	0.76	0.88	0.60	0.36	0.37	0.14	0.38	0.64	0.38
Other	0.04	0.04	0.04	0.08	0.05	0.05	0.05	0.05	0.04	0.10	0.06	0.05	0.04	0.04	0.04	0.07	0.04	0.05
Preventive Dental Services (Claims/User P.Y.E.)	0.42	0.43	0.12	0.44	0.74	0.44	0.57	0.58	0.16	0.73	0.89	0.61	0.36	0.37	0.11	0.36	0.66	0.38
Prophylaxis/Cleaning	0.41	0.42	0.12	0.43	0.72	0.43	0.56	0.57	0.16	0.72	0.88	0.60	0.35	0.36	0.11	0.36	0.64	0.37
Topical Application of Fluoride	0.36	0.38	0.07	0.34	0.85	0.38	0.50	0.52	0.10	0.58	0.80	0.53	0.31	0.32	0.06	0.28	0.57	0.32
Sealants	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Other	0.01	0.01	0.00	0.01	0.01	0.01	0.01	0.01	0.00	0.01	0.02	0.01	0.01	0.01	0.00	0.01	0.01	0.01
Therapeutic Services (Claims/User P.Y.E.)	0.76	0.77	0.36	0.83	0.94	0.91	0.93	0.93	0.44	1.26	1.14	1.18	0.69	0.71	0.34	0.72	0.83	0.82
Restoration of Carious Lesions	0.51	0.52	0.22	0.50	0.70	0.63	0.65	0.66	0.29	0.81	0.88	0.85	0.48	0.47	0.20	0.42	0.60	0.55
Crowns	0.05	0.08	0.02	0.05	0.05	0.06	0.07	0.07	0.03	0.08	0.06	0.08	0.05	0.05	0.02	0.05	0.05	0.06
Endodontics	0.05	0.05	0.03	0.05	0.05	0.07	0.06	0.06	0.04	0.07	0.07	0.08	0.05	0.05	0.02	0.04	0.04	0.06
Periodontics	0.01	0.01	0.01	0.04	0.01	0.01	0.01	0.01	0.01	0.06	0.01	0.01	0.01	0.01	0.01	0.03	0.01	0.01
Prosthodontics	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Oral Surgery	0.13	0.13	0.07	0.18	0.12	0.14	0.13	0.13	0.07	0.23	0.13	0.15	0.12	0.12	0.08	0.16	0.12	0.14

APPENDIX TABLE R-3.2

Medicaid Children's Use of Diagnostic, Preventive and Therapeutic Services:
by Eligibility Group and Preventive Medical Care Status, 1992
Georgia

Service Category	Dental Services in 1992						Preventive Medical Care Visits in 1992						Non Preventive Medical Care Visits in 1992					
	All Children	AFDC	Poverty Related	Blind/ Disabled	Foster Care	Medically Needy/ Other	All Children	AFDC	Poverty Related	Blind/ Disabled	Foster Care	Medically Needy/ Other	All Children	AFDC	Poverty Related	Blind/ Disabled	Foster Care	Medically Needy/ Other
Users of Diagnostic, Preventive or Therapeutic Services																		
Total Claims/User P.Y.E.	1.99	2.06	1.60	2.14	2.99	2.12	2.04	2.20	1.48	2.97	3.40	2.05	1.97	2.01	1.67	1.95	2.78	2.15
Total Payments/User P.Y.E.	45.39	46.61	38.09	49.38	61.37	48.31	44.26	47.27	33.64	65.17	68.12	45.02	45.89	46.35	40.98	45.65	57.94	49.63
Diagnostic Services (Claims/User P.Y.E.)	0.85	0.89	0.64	0.91	1.39	0.90	0.89	0.98	0.62	1.29	1.58	0.89	0.83	0.86	0.65	0.82	1.29	0.90
X-ray Only	0.38	0.41	0.26	0.38	0.60	0.41	0.38	0.43	0.24	0.52	0.67	0.39	0.38	0.41	0.28	0.34	0.56	0.42
Clinical Oral Exam	0.41	0.42	0.32	0.46	0.73	0.43	0.46	0.49	0.33	0.68	0.85	0.45	0.38	0.39	0.31	0.41	0.68	0.42
Other	0.08	0.06	0.06	0.08	0.06	0.06	0.05	0.05	0.05	0.09	0.07	0.05	0.06	0.06	0.06	0.07	0.05	0.06
Preventive Dental Services (Claims/User P.Y.E.)	0.41	0.42	0.31	0.45	0.75	0.43	0.45	0.49	0.33	0.66	0.86	0.45	0.39	0.40	0.31	0.40	0.69	0.43
Prophylaxis/Cleaning	0.39	0.41	0.30	0.44	0.73	0.42	0.44	0.48	0.32	0.65	0.85	0.44	0.37	0.38	0.29	0.39	0.68	0.41
Topical Application of Fluoride	0.36	0.38	0.28	0.38	0.67	0.39	0.40	0.44	0.27	0.58	0.78	0.41	0.34	0.36	0.25	0.34	0.61	0.38
Sealants	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Other	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Therapeutic Services (Claims/User P.Y.E.)	0.73	0.75	0.64	0.78	0.85	0.79	0.69	0.74	0.54	1.02	0.96	0.71	0.75	0.75	0.71	0.73	0.80	0.82
Restoration of Carious Lesions	0.45	0.48	0.36	0.47	0.60	0.50	0.43	0.46	0.31	0.65	0.66	0.46	0.46	0.46	0.39	0.43	0.57	0.51
Crowns	0.06	0.06	0.08	0.05	0.04	0.06	0.06	0.06	0.07	0.06	0.06	0.06	0.08	0.06	0.09	0.05	0.04	0.06
Endodontics	0.06	0.06	0.07	0.05	0.06	0.07	0.06	0.06	0.06	0.06	0.08	0.07	0.07	0.06	0.08	0.05	0.05	0.07
Periodontics	0.01	0.01	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.01	0.01	0.00	0.02	0.00	0.01
Prosthodontics	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Oral Surgery	0.12	0.13	0.11	0.16	0.12	0.13	0.10	0.11	0.08	0.18	0.13	0.09	0.14	0.14	0.13	0.16	0.12	0.15

APPENDIX TABLE R-3.2

Medicaid Children's Use of Diagnostic, Preventive and Therapeutic Services:
by Eligibility Group and Preventive Medical Care Status, 1989
Michigan

Service Category	Dental Services in 1992						Preventive Medical Care Visits in 1989						Non Preventive Medical Care Visits in 1989					
	All Children	AFDC	Poverty Related	Blind/ Disabled	Foster Care	Medically Needy/ Other	All Children	AFDC	Poverty Related	Blind/ Disabled	Foster Care	Medically Needy/ Other	All Children	AFDC	Poverty Related	Blind/ Disabled	Foster Care	Medically Needy/ Other
Users of Diagnostic, Preventive or Therapeutic Services																		
Total Claims/User P.Y.E.	1.64	1.62	0.42	1.34	N.A.	1.92	1.61	1.55	0.21	1.75	N.A.	2.13	1.66	1.68	0.58	1.26	N.A.	1.83
Total Payments/User P.Y.E.	25.52	24.75	8.08	22.43	N.A.	31.41	24.17	22.98	4.08	27.93	N.A.	33.28	28.18	25.65	10.99	21.22	N.A.	30.64
Diagnostic Services (Claims/User P.Y.E.)	0.71	0.71	0.15	0.58	N.A.	0.79	0.71	0.69	0.07	0.78	N.A.	0.91	0.71	0.72	0.20	0.53	N.A.	0.74
X-ray Only	0.34	0.34	0.07	0.24	N.A.	0.38	0.33	0.32	0.03	0.32	N.A.	0.43	0.34	0.35	0.09	0.22	N.A.	0.37
Clinical Oral Exam	0.37	0.37	0.08	0.33	N.A.	0.40	0.38	0.37	0.04	0.46	N.A.	0.48	0.36	0.37	0.11	0.30	N.A.	0.37
Other	0.00	0.00	0.00	0.01	N.A.	0.00	0.00	0.00	0.00	0.01	N.A.	0.00	0.00	0.00	0.00	0.01	N.A.	0.00
Preventive Dental Services (Claims/User P.Y.E.)	0.36	0.36	0.07	0.30	N.A.	0.40	0.37	0.36	0.04	0.43	N.A.	0.48	0.36	0.36	0.09	0.28	N.A.	0.36
Prophylaxis/Cleaning	0.38	0.38	0.07	0.30	N.A.	0.39	0.37	0.38	0.04	0.42	N.A.	0.47	0.35	0.36	0.09	0.28	N.A.	0.36
Topical Application of Fluoride	0.21	0.22	0.01	0.11	N.A.	0.20	0.23	0.23	0.01	0.17	N.A.	0.27	0.20	0.22	0.01	0.10	N.A.	0.17
Sealants	--	--	--	--	N.A.	--	--	--	--	--	N.A.	--	--	--	--	--	N.A.	--
Other	0.00	0.00	0.00	0.00	N.A.	0.00	0.00	0.00	0.00	0.00	N.A.	0.00	0.00	0.00	0.00	0.00	N.A.	0.00
Therapeutic Services (Claims/User P.Y.E.)	0.57	0.55	0.21	0.48	N.A.	0.73	0.52	0.50	0.10	0.54	N.A.	0.74	0.60	0.58	0.29	0.45	N.A.	0.72
Restoration of Carious Lesions	0.47	0.45	0.17	0.34	N.A.	0.61	0.43	0.40	0.07	0.37	N.A.	0.62	0.49	0.47	0.24	0.33	N.A.	0.60
Crowns	0.02	0.02	0.01	0.01	N.A.	0.02	0.02	0.02	0.01	0.03	N.A.	0.02	0.01	0.01	0.01	0.01	N.A.	0.01
Endodontics	0.02	0.02	0.01	0.01	N.A.	0.02	0.02	0.02	0.01	0.02	N.A.	0.02	0.02	0.02	0.00	0.01	N.A.	0.02
Periodontics	0.00	0.00	0.00	0.00	N.A.	0.00	0.00	0.00	0.00	0.00	N.A.	0.00	0.00	0.00	0.00	0.00	N.A.	0.00
Prosthodontics	0.00	0.00	0.00	0.00	N.A.	0.00	0.00	0.00	0.00	0.00	N.A.	0.00	0.00	0.00	0.00	0.00	N.A.	0.00
Oral Surgery	0.07	0.08	0.03	0.09	N.A.	0.08	0.06	0.05	0.01	0.10	N.A.	0.07	0.07	0.07	0.04	0.09	N.A.	0.09

APPENDIX TABLE R-3.2

Medicaid Children's Use of Diagnostic, Preventive and Therapeutic Services:
by Eligibility Group and Preventive Medical Care Status, 1992
Michigan

Service Category	Dental Services in 1992						Preventive Medical Care Visits in 1992						Non Preventive Medical Care Visits in 1992					
	All Children	AFDC	Poverty Related	Blind/ Disabled	Foster Care	Medically Needy/ Other	All Children	AFDC	Poverty Related	Blind/ Disabled	Foster Care	Medically Needy/ Other	All Children	AFDC	Poverty Related	Blind/ Disabled	Foster Care	Medically Needy/ Other
Users of Diagnostic, Preventive or Therapeutic Services																		
Total Claims/User P.Y.E.	1.66	1.68	0.93	1.38	N.A.	2.05	1.49	1.49	0.74	1.78	N.A.	2.21	1.78	1.79	1.16	1.27	N.A.	1.99
Total Payments/User P.Y.E.	27.65	27.57	16.28	24.31	N.A.	34.95	24.32	24.22	12.78	29.56	N.A.	35.81	29.58	29.55	20.48	22.91	N.A.	34.59
Diagnostic Services (Claims/User P.Y.E.)	0.70	0.71	0.37	0.59	N.A.	0.86	0.65	0.65	0.30	0.78	N.A.	0.97	0.73	0.75	0.44	0.54	N.A.	0.81
X-ray Only	0.32	0.33	0.15	0.25	N.A.	0.40	0.28	0.28	0.12	0.32	N.A.	0.43	0.35	0.36	0.20	0.24	N.A.	0.39
Clinical Oral Exam	0.38	0.38	0.21	0.33	N.A.	0.46	0.37	0.37	0.18	0.46	N.A.	0.54	0.38	0.39	0.24	0.30	N.A.	0.42
Other	0.00	0.00	0.00	0.00	N.A.	0.00	0.00	0.00	0.00	0.00	N.A.	0.00	0.00	0.00	0.00	0.00	N.A.	0.00
Preventive Dental Services (Claims/User P.Y.E.)	0.43	0.44	0.22	0.35	N.A.	0.53	0.40	0.40	0.18	0.48	N.A.	0.60	0.45	0.47	0.26	0.31	N.A.	0.50
Prophylaxis/Cleaning	0.36	0.37	0.19	0.31	N.A.	0.44	0.35	0.35	0.17	0.43	N.A.	0.52	0.37	0.38	0.23	0.28	N.A.	0.41
Topical Application of Fluoride	0.21	0.22	0.11	0.14	N.A.	0.23	0.21	0.21	0.10	0.22	N.A.	0.30	0.21	0.22	0.12	0.12	N.A.	0.21
Sealants	0.07	0.07	0.02	0.04	N.A.	0.08	0.05	0.05	0.01	0.05	N.A.	0.08	0.08	0.09	0.03	0.04	N.A.	0.09
Other	0.07	0.08	0.02	0.04	N.A.	0.09	0.05	0.05	0.01	0.05	N.A.	0.08	0.08	0.09	0.04	0.04	N.A.	0.09
Therapeutic Services (Claims/User P.Y.E.)	0.53	0.53	0.34	0.44	N.A.	0.67	0.45	0.44	0.28	0.51	N.A.	0.64	0.58	0.58	0.45	0.42	N.A.	0.68
Restoration of Carious Lesions	0.43	0.42	0.27	0.32	N.A.	0.55	0.36	0.35	0.20	0.37	N.A.	0.53	0.47	0.47	0.35	0.31	N.A.	0.56
Crowns	0.02	0.02	0.02	0.02	N.A.	0.01	0.02	0.02	0.02	0.03	N.A.	0.02	0.01	0.01	0.02	0.01	N.A.	0.01
Endodontics	0.02	0.02	0.02	0.01	N.A.	0.02	0.02	0.02	0.02	0.02	N.A.	0.02	0.02	0.02	0.03	0.01	N.A.	0.02
Periodontics	0.00	0.00	0.00	0.00	N.A.	0.00	0.00	0.00	0.00	0.00	N.A.	0.00	0.00	0.00	0.00	0.00	N.A.	0.00
Prosthodontics	0.00	0.00	0.00	0.00	N.A.	0.00	0.00	0.00	0.00	0.00	N.A.	0.00	0.00	0.00	0.00	0.00	N.A.	0.00
Oral Surgery	0.07	0.08	0.04	0.08	N.A.	0.08	0.05	0.05	0.02	0.09	N.A.	0.06	0.08	0.07	0.06	0.08	N.A.	0.09

APPENDIX TABLE R-3.2

Medicaid Children's Use of Diagnostic, Preventive and Therapeutic Services:
by Eligibility Group and Preventive Medical Care Status, 1989
Tennessee

Service Category	Dental Services in 1992						Preventive Medical Care Visits in 1989						Non Preventive Medical Care Visits in 1989					
	All Children	AFDC	Poverty Related	Blind/ Disabled	Foster Care	Medically Needy/ Other	All Children	AFDC	Poverty Related	Blind/ Disabled	Foster Care	Medically Needy/ Other	All Children	AFDC	Poverty Related	Blind/ Disabled	Foster Care	Medically Needy/ Other
Users of Diagnostic, Preventive or Therapeutic Services																		
Total Claims/User P.Y.E.	2.45	2.65	1.07	2.05	3.10	2.97	1.97	2.12	0.83	2.84	3.33	3.12	2.63	2.83	1.29	1.91	2.99	2.93
Total Payments/User P.Y.E.	40.11	41.11	21.36	35.01	48.38	52.41	32.70	33.72	16.08	48.43	50.38	54.77	42.86	43.66	26.03	32.64	47.41	51.86
Diagnostic Services (Claims/User P.Y.E.)	1.23	1.40	0.39	0.98	1.59	1.36	0.95	1.09	0.30	1.35	1.75	1.41	1.33	1.51	0.47	0.91	1.51	1.35
X-ray Only	0.81	0.94	0.22	0.61	1.04	0.92	0.58	0.67	0.15	0.76	1.12	0.90	0.90	1.03	0.29	0.58	1.01	0.93
Clinical Oral Exam	0.41	0.46	0.17	0.37	0.55	0.44	0.37	0.41	0.15	0.59	0.63	0.51	0.43	0.48	0.18	0.33	0.51	0.42
Other	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Preventive Dental Services (Claims/User P.Y.E.)	0.40	0.45	0.15	0.35	0.54	0.42	0.35	0.39	0.13	0.54	0.61	0.49	0.41	0.47	0.16	0.32	0.50	0.41
Prophylaxis/Cleaning	0.39	0.45	0.15	0.35	0.54	0.42	0.35	0.39	0.13	0.54	0.61	0.48	0.41	0.47	0.16	0.32	0.50	0.40
Topical Application of Fluoride	0.35	0.41	0.11	0.28	0.45	0.38	0.31	0.37	0.10	0.45	0.50	0.43	0.37	0.43	0.12	0.25	0.42	0.35
Sealants	0.30	0.41	0.00	0.17	0.28	0.25	0.16	0.21	0.00	0.14	0.28	0.25	0.38	0.47	0.00	0.17	0.27	0.25
Other	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Therapeutic Services (Claims/User P.Y.E.)	0.83	0.80	0.54	0.71	0.97	1.18	0.67	0.64	0.40	0.94	0.97	1.23	0.89	0.85	0.66	0.67	0.97	1.17
Restoration of Carious Lesions	0.52	0.51	0.28	0.42	0.72	0.76	0.38	0.37	0.20	0.52	0.72	0.73	0.57	0.56	0.36	0.41	0.71	0.77
Crowns	0.10	0.09	0.13	0.08	0.06	0.12	0.12	0.12	0.11	0.17	0.07	0.19	0.09	0.08	0.14	0.07	0.05	0.11
Endodontics	0.08	0.07	0.08	0.05	0.06	0.11	0.08	0.07	0.06	0.06	0.05	0.14	0.08	0.08	0.09	0.05	0.06	0.11
Periodontics	0.00	0.00	0.00	0.02	0.01	0.00	0.00	0.00	0.00	0.04	0.01	0.00	0.00	0.00	0.00	0.02	0.01	0.00
Prosthodontics	0.01	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.01	0.00	0.01	0.01	0.01	0.00	0.01	0.01	0.01
Oral Surgery	0.12	0.11	0.05	0.13	0.12	0.18	0.08	0.08	0.03	0.15	0.12	0.16	0.13	0.13	0.06	0.13	0.12	0.18

APPENDIX TABLE R-3.2

Medicaid Children's Use of Diagnostic, Preventive and Therapeutic Services: by Eligibility Group and Preventive Medical Care Status, 1992
Tennessee

Service Category	Dental Services in 1992						Preventive Medical Care Visits in 1992						Non Preventive Medical Care Visits in 1992					
	All Children	AFDC	Poverty Related	Blind/ Disabled	Foster Care	Medically Needy/ Other	All Children	AFDC	Poverty Related	Blind/ Disabled	Foster Care	Medically Needy/ Other	All Children	AFDC	Poverty Related	Blind/ Disabled	Foster Care	Medically Needy/ Other
Users of Diagnostic, Preventive or Therapeutic Services																		
Total Claims/User P.Y.E.	2.24	2.50	1.51	2.15	2.90	2.72	1.71	1.92	1.18	2.76	3.37	2.50	2.48	2.72	1.80	2.03	2.69	2.77
Total Payments/User P.Y.E.	40.47	42.84	29.10	40.18	54.75	52.25	31.31	33.57	22.88	52.26	62.96	45.10	44.64	46.48	34.44	37.77	51.10	53.87
Diagnostic Services (Claims/User P.Y.E.)	1.03	1.22	0.60	0.99	1.35	1.19	0.75	0.89	0.46	1.19	1.53	1.10	1.15	1.35	0.72	0.96	1.27	1.22
X-ray Only	0.59	0.70	0.31	0.56	0.79	0.73	0.38	0.46	0.21	0.59	0.87	0.61	0.68	0.80	0.40	0.55	0.76	0.76
Clinical Oral Exam	0.44	0.51	0.29	0.44	0.56	0.46	0.36	0.43	0.24	0.60	0.66	0.49	0.47	0.55	0.32	0.40	0.51	0.46
Other	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Preventive Dental Services (Claims/User P.Y.E.)	0.42	0.50	0.27	0.41	0.54	0.45	0.35	0.41	0.22	0.57	0.64	0.47	0.46	0.53	0.31	0.38	0.50	0.44
Prophylaxis/Cleaning	0.42	0.50	0.27	0.41	0.54	0.45	0.35	0.41	0.22	0.57	0.64	0.47	0.45	0.53	0.30	0.38	0.50	0.44
Topical Application of Fluoride	0.37	0.45	0.23	0.35	0.44	0.38	0.31	0.37	0.20	0.49	0.53	0.42	0.40	0.48	0.26	0.32	0.40	0.37
Sealants	0.32	0.47	0.08	0.32	0.30	0.35	0.14	0.19	0.03	0.29	0.30	0.29	0.41	0.58	0.12	0.33	0.30	0.36
Other	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00
Therapeutic Services (Claims/User P.Y.E.)	0.79	0.78	0.64	0.74	1.00	1.07	0.62	0.62	0.49	1.00	1.19	0.93	0.87	0.84	0.77	0.69	0.92	1.11
Restoration of Carious Lesions	0.45	0.45	0.30	0.41	0.69	0.68	0.32	0.32	0.22	0.49	0.85	0.57	0.51	0.50	0.37	0.40	0.62	0.70
Crowns	0.12	0.10	0.16	0.09	0.06	0.09	0.14	0.13	0.15	0.20	0.08	0.12	0.11	0.09	0.17	0.07	0.06	0.08
Endodontics	0.10	0.09	0.10	0.07	0.08	0.11	0.09	0.08	0.09	0.10	0.09	0.11	0.10	0.10	0.12	0.06	0.07	0.11
Periodontics	0.00	0.00	0.00	0.02	0.01	0.01	0.00	0.00	0.00	0.02	0.00	0.00	0.01	0.01	0.00	0.01	0.01	0.01
Prosthodontics	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
Oral Surgery	0.12	0.13	0.08	0.16	0.16	0.19	0.07	0.08	0.04	0.18	0.15	0.13	0.15	0.15	0.11	0.15	0.16	0.20

APPENDIX TABLE R-3.3

Medicaid Children's Use of Diagnostic, Preventive and Therapeutic Services:
by Gender and Preventive Medical Care Status, 1989
California

Service Category	Dental Services in 1989			Preventive Medical Care Visits in 1989			Non Preventive Medical Care Visits in 1989		
	All Children	Male	Female	All Children	Male	Female	All Children	Male	Female
Users of Diagnostic, Preventive or Therapeutic Services									
Total Claims/User P.Y.E.	1.52	1.45	1.57	1.32	1.29	1.36	1.60	1.53	1.67
Total Payments/User P.Y.E.	23.62	22.50	24.70	20.09	19.38	20.78	25.23	23.93	26.46
Diagnostic Services (Claims/User P.Y.E.)	0.70	0.68	0.73	0.61	0.60	0.63	0.74	0.71	0.77
X-ray Only	0.54	0.52	0.56	0.46	0.44	0.47	0.58	0.56	0.60
Clinical Oral Exam	0.16	0.16	0.17	0.16	0.16	0.16	0.16	0.16	0.17
Other	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Preventive Dental Services (Claims/User P.Y.E.)	0.06	0.05	0.07	0.04	0.04	0.05	0.07	0.06	0.07
Prophylaxis/Cleaning	0.05	0.04	0.06	0.04	0.03	0.04	0.06	0.05	0.07
Topical Application of Fluoride	0.16	0.16	0.15	0.14	0.15	0.14	0.16	0.16	0.16
Sealants	--	--	--	--	--	--	--	--	--
Other	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Therapeutic Services (Claims/User P.Y.E.)	0.75	0.72	0.78	0.67	0.65	0.68	0.79	0.76	0.82
Restoration of Carious Lesions	0.49	0.46	0.52	0.41	0.39	0.43	0.53	0.50	0.56
Crowns	0.06	0.06	0.05	0.07	0.07	0.06	0.05	0.05	0.05
Endodontics	0.05	0.05	0.05	0.06	0.06	0.06	0.05	0.05	0.04
Periodontics	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Prosthodontics	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Oral Surgery	0.13	0.12	0.13	.	0.11	0.10	0.11	.	0.14

APPENDIX TABLE R-3.3

Medicaid Children's Use of Diagnostic, Preventive and Therapeutic Services: by Gender and Preventive Medical Care Status, 1992
California

Service Category	Dental Services in 1989			Preventive Medical Care Visits in 1992			Non Preventive Medical Care Visits in 1992		
	All Children	Male	Female	All Children	Male	Female	All Children	Male	Female
Users of Diagnostic, Preventive or Therapeutic Services									
Total Claims/User P.Y.E.	1.65	1.59	1.72	1.47	1.43	1.51	1.74	1.66	1.81
Total Payments/User P.Y.E.	41.82	39.34	44.19	35.48	33.83	37.07	44.71	41.87	47.40
Diagnostic Services (Claims/User P.Y.E.)	0.70	0.67	0.72	0.63	0.62	0.65	0.73	0.70	0.75
X-ray Only	0.52	0.50	0.54	0.46	0.44	0.47	0.55	0.53	0.57
Clinical Oral Exam	0.17	0.17	0.18	0.18	0.17	0.18	0.17	0.17	0.18
Other	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Preventive Dental Services (Claims/User P.Y.E.)	0.06	0.05	0.07	0.05	0.04	0.05	0.07	0.06	0.07
Prophylaxis/Cleaning	0.05	0.05	0.06	0.04	0.03	0.04	0.06	0.05	0.07
Topical Application of Fluoride	0.14	0.15	0.14	0.14	0.14	0.14	0.15	0.15	0.14
Sealants	--	--	--	--	--	--	--	--	--
Other	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Therapeutic Services (Claims/User P.Y.E.)	0.90	0.86	0.93	0.79	0.77	0.81	0.94	0.90	0.99
Restoration of Carious Lesions	0.60	0.56	0.63	0.51	0.48	0.53	0.64	0.60	0.68
Crowns	0.06	0.06	0.06	0.07	0.07	0.07	0.06	0.06	0.06
Endodontics	0.06	0.07	0.06	0.07	0.07	0.07	0.06	0.06	0.06
Periodontics	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Prosthodontics	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Oral Surgery	0.14	0.14	0.15	0.00	0.12	0.12	0.12	.	0.15

APPENDIX TABLE R-3.3

Medicaid Children's Use of Diagnostic, Preventive and Therapeutic Services: by Gender and Preventive Medical Care Status, 1989
Georgia

Service Category	Dental Services in 1989			Preventive Medical Care Visits in 1989			Non Preventive Medical Care Visits in 1989		
	All Children	Male	Female	All Children	Male	Female	All Children	Male	Female
Users of Diagnostic, Preventive or Therapeutic Services									
Total Claims/User P.Y.E.	2.04	1.94	2.13	2.62	2.51	2.71	1.81	1.71	1.91
Total Payments/User P.Y.E.	43.91	40.90	46.61	54.38	51.44	57.06	39.78	36.66	42.53
Diagnostic Services (Claims/User P.Y.E.)	0.86	0.83	0.89	1.12	1.08	1.15	0.76	0.73	0.79
X-ray Only	0.40	0.38	0.42	0.50	0.48	0.52	0.36	0.34	0.38
Clinical Oral Exam	0.42	0.41	0.43	0.57	0.56	0.58	0.36	0.35	0.37
Other	0.04	0.04	0.05	0.05	0.05	0.05	0.04	0.04	0.05
Preventive Dental Services (Claims/User P.Y.E.)	0.42	0.41	0.42	0.57	0.56	0.58	0.36	0.35	0.36
Prophylaxis/Cleaning	0.41	0.40	0.41	0.56	0.55	0.57	0.35	0.35	0.35
Topical Application of Fluoride	0.36	0.37	0.36	0.50	0.50	0.50	0.31	0.31	0.30
Sealants	--	--	--	--	--	--	--	--	--
Other	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Therapeutic Services (Claims/User P.Y.E.)	0.76	0.70	0.82	0.93	0.87	0.99	0.69	0.63	0.75
Restoration of Carious Lesions	0.51	0.46	0.56	0.65	0.60	0.70	0.46	0.41	0.50
Crowns	0.05	0.06	0.05	0.07	0.07	0.06	0.05	0.05	0.05
Endodontics	0.05	0.05	0.05	0.06	0.06	0.06	0.05	0.05	0.05
Periodontics	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Prosthodontics	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Oral Surgery	0.13	0.11	0.14	0.13	0.12	0.14	0.12	0.11	0.14

APPENDIX TABLE R-3.3

Medicaid Children's Use of Diagnostic, Preventive and Therapeutic Services: by Gender and Preventive Medical Care Status, 1992
Georgia

Service Category	Dental Services in 1989			Preventive Medical Care Visits in 1992			Non Preventive Medical Care Visits in 1992		
	All Children	Male	Female	All Children	Male	Female	All Children	Male	Female
Users of Diagnostic, Preventive or Therapeutic Services									
Total Claims/User P.Y.E.	1.99	1.89	2.08	2.04	1.96	2.11	1.97	1.86	2.07
Total Payments/User P.Y.E.	45.39	42.51	48.03	44.26	42.42	46.04	45.89	42.55	48.87
Diagnostic Services (Claims/User P.Y.E.)	0.85	0.82	0.88	0.89	0.86	0.92	0.83	0.79	0.86
X-ray Only	0.38	0.37	0.40	0.38	0.37	0.40	0.38	0.37	0.40
Clinical Oral Exam	0.41	0.40	0.41	0.46	0.44	0.47	0.38	0.38	0.39
Other	0.06	0.05	0.06	0.05	0.05	0.06	0.06	0.05	0.07
Preventive Dental Services (Claims/User P.Y.E.)	0.41	0.40	0.41	0.45	0.44	0.46	0.39	0.38	0.39
Prophylaxis/Cleaning	0.39	0.39	0.40	0.44	0.43	0.45	0.37	0.37	0.38
Topical Application of Fluoride	0.36	0.36	0.36	0.40	0.39	0.41	0.34	0.34	0.34
Sealants	--	--	--	--	--	--	--	--	--
Other	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Therapeutic Services (Claims/User P.Y.E.)	0.73	0.67	0.79	0.69	0.65	0.73	0.75	0.68	0.82
Restoration of Carious Lesions	0.45	0.40	0.49	0.43	0.40	0.46	0.46	0.40	0.50
Crowns	0.06	0.07	0.06	0.06	0.07	0.06	0.06	0.06	0.06
Endodontics	0.06	0.06	0.07	0.06	0.06	0.06	0.07	0.06	0.07
Periodontics	0.01	0.00	0.01	0.00	0.00	0.01	0.01	0.00	0.01
Prosthodontics	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Oral Surgery	0.12	0.11	0.14	0.10	0.09	0.10	0.14	0.12	0.15

APPENDIX TABLE R-3.3

Medicaid Children's Use of Diagnostic, Preventive and Therapeutic Services: by Gender and Preventive Medical Care Status, 1989
Michigan

Service Category	Dental Services in 1989			Preventive Medical Care Visits in 1989			Non Preventive Medical Care Visits in 1989		
	All Children	Male	Female	All Children	Male	Female	All Children	Male	Female
Users of Diagnostic, Preventive or Therapeutic Services									
Total Claims/User P.Y.E.	1.64	1.58	1.70	1.61	1.59	1.63	1.66	1.58	1.73
Total Payments/User P.Y.E.	25.52	24.46	26.51	24.17	23.81	24.51	26.18	24.79	27.45
Diagnostic Services (Claims/User P.Y.E.)	0.71	0.69	0.73	0.71	0.70	0.72	0.71	0.68	0.73
X-ray Only	0.34	0.33	0.35	0.33	0.32	0.33	0.34	0.33	0.36
Clinical Oral Exam	0.37	0.36	0.38	0.38	0.38	0.38	0.36	0.35	0.37
Other	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Preventive Dental Services (Claims/User P.Y.E.)	0.36	0.35	0.37	0.37	0.37	0.38	0.36	0.35	0.36
Prophylaxis/Cleaning	0.36	0.35	0.37	0.37	0.37	0.37	0.35	0.34	0.36
Topical Application of Fluoride	0.21	0.22	0.21	0.23	0.23	0.22	0.20	0.21	0.20
Sealants	--	--	--	--	--	--	--	--	--
Other	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Therapeutic Services (Claims/User P.Y.E.)	0.57	0.54	0.60	0.52	0.51	0.53	0.60	0.56	0.63
Restoration of Carious Lesions	0.47	0.44	0.49	0.43	0.42	0.44	0.49	0.45	0.52
Crowns	0.02	0.02	0.01	0.02	0.02	0.02	0.01	0.02	0.01
Endodontics	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Periodontics	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Prosthodontics	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Oral Surgery	0.07	0.06	0.07	0.06	0.05	0.06	0.07	0.07	0.08

APPENDIX TABLE R-3.3

Medicaid Children's Use of Diagnostic, Preventive and Therapeutic Services:
by Gender and Preventive Medical Care Status, 1992
Michigan

Service Category	Dental Services in 1989			Preventive Medical Care Visits in 1992			Non Preventive Medical Care Visits in 1992		
	All Children	Male	Female	All Children	Male	Female	All Children	Male	Female
Users of Diagnostic, Preventive or Therapeutic Services									
Total Claims/User P.Y.E.	1.66	1.61	1.71	1.49	1.47	1.51	1.76	1.69	1.82
Total Payments/User P.Y.E.	27.65	26.64	28.60	24.32	24.00	24.65	29.58	28.25	30.80
Diagnostic Services (Claims/User P.Y.E.)	0.70	0.68	0.72	0.65	0.64	0.66	0.73	0.70	0.75
X-ray Only	0.32	0.31	0.33	0.28	0.28	0.28	0.35	0.33	0.36
Clinical Oral Exam	0.38	0.37	0.39	0.37	0.36	0.37	0.38	0.37	0.39
Other	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Preventive Dental Services (Claims/User P.Y.E.)	0.43	0.42	0.44	0.40	0.39	0.40	0.45	0.44	0.46
Prophylaxis/Cleaning	0.36	0.35	0.37	0.35	0.34	0.35	0.37	0.36	0.38
Topical Application of Fluoride	0.21	0.21	0.20	0.21	0.21	0.20	0.21	0.21	0.20
Sealants	0.07	0.07	0.07	0.05	0.05	0.05	0.08	0.08	0.08
Other	0.07	0.07	0.07	0.05	0.05	0.05	0.08	0.08	0.08
Therapeutic Services (Claims/User P.Y.E.)	0.53	0.51	0.55	0.45	0.44	0.45	0.58	0.55	0.61
Restoration of Carious Lesions	0.43	0.41	0.45	0.36	0.35	0.37	0.47	0.44	0.49
Crowns	0.02	0.02	0.01	0.02	0.02	0.02	0.01	0.02	0.01
Endodontics	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Periodontics	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Prosthodontics	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Oral Surgery	0.07	0.06	0.07	0.05	0.05	0.05	0.08	0.07	0.08

APPENDIX TABLE R-3.3

Medicaid Children's Use of Diagnostic, Preventive and Therapeutic Services: by Gender and Preventive Medical Care Status, 1989
Tennessee

Service Category	Dental Services in 1989			Preventive Medical Care Visits in 1989			Non Preventive Medical Care Visits in 1989		
	All Children	Male	Female	All Children	Male	Female	All Children	Male	Female
Users of Diagnostic, Preventive or Therapeutic Services									
Total Claims/User P.Y.E.	2.45	2.30	2.59	1.97	1.92	2.02	2.63	2.46	2.79
Total Payments/User P.Y.E.	40.11	37.26	42.75	32.70	31.70	33.70	42.86	39.43	45.94
Diagnostic Services (Claims/User P.Y.E.)	1.23	1.16	1.29	0.95	0.92	0.98	1.33	1.25	1.40
X-ray Only	0.81	0.76	0.86	0.58	0.56	0.60	0.90	0.84	0.95
Clinical Oral Exam	0.41	0.40	0.43	0.37	0.36	0.38	0.43	0.41	0.45
Other	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Preventive Dental Services (Claims/User P.Y.E.)	0.40	0.38	0.41	0.35	0.34	0.36	0.41	0.40	0.43
Prophylaxis/Cleaning	0.39	0.38	0.41	0.35	0.34	0.36	0.41	0.39	0.43
Topical Application of Fluoride	0.35	0.35	0.36	0.31	0.31	0.32	0.37	0.36	0.38
Sealants	0.30	0.30	0.31	0.16	0.16	0.16	0.36	0.35	0.36
Other	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Therapeutic Services (Claims/User P.Y.E.)	0.83	0.76	0.89	0.67	0.65	0.68	0.89	0.81	0.96
Restoration of Carious Lesions	0.52	0.46	0.58	0.38	0.36	0.41	0.57	0.50	0.64
Crowns	0.10	0.11	0.09	0.12	0.14	0.11	0.09	0.11	0.08
Endodontics	0.08	0.08	0.08	0.08	0.08	0.07	0.08	0.08	0.08
Periodontics	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
Prosthodontics	0.01	0.00	0.01	0.00	0.00	0.00	0.01	0.00	0.01
Oral Surgery	0.12	0.10	0.13	0.08	0.07	0.08	0.13	0.12	0.14

APPENDIX TABLE R-3.3

Medicaid Children's Use of Diagnostic, Preventive and Therapeutic Services:
by Gender and Preventive Medical Care Status, 1992
Tennessee

Service Category	Dental Services in 1989			Preventive Medical Care Visits in 1992			Non Preventive Medical Care Visits in 1992		
	All Children	Male	Female	All Children	Male	Female	All Children	Male	Female
Users of Diagnostic, Preventive or Therapeutic Services									
Total Claims/User P.Y.E.	2.24	2.14	2.33	1.71	1.67	1.76	2.48	2.36	2.58
Total Payments/User P.Y.E.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Diagnostic Services (Claims/User P.Y.E.)	1.03	0.98	1.07	0.75	0.73	0.77	1.15	1.11	1.20
X-ray Only	0.59	0.56	0.62	0.38	0.37	0.40	0.68	0.65	0.71
Clinical Oral Exam	0.44	0.42	0.45	0.36	0.36	0.37	0.47	0.46	0.48
Other	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Preventive Dental Services (Claims/User P.Y.E.)	0.42	0.41	0.43	0.35	0.34	0.35	0.46	0.45	0.46
Prophylaxis/Cleaning	0.42	0.41	0.43	0.35	0.34	0.35	0.45	0.44	0.46
Topical Application of Fluoride	0.37	0.37	0.38	0.31	0.30	0.31	0.40	0.40	0.40
Sealants	0.32	0.33	0.32	0.14	0.13	0.15	0.41	0.42	0.40
Other	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Therapeutic Services (Claims/User P.Y.E.)	0.79	0.74	0.83	0.62	0.61	0.63	0.87	0.81	0.92
Restoration of Carious Lesions	0.45	0.41	0.48	0.32	0.30	0.34	0.51	0.46	0.55
Crowns	0.12	0.13	0.11	0.14	0.15	0.13	0.11	0.11	0.10
Endodontics	0.10	0.09	0.10	0.09	0.09	0.09	0.10	0.10	0.10
Periodontics	0.00	0.00	0.01	0.00	0.00	0.00	0.01	0.00	0.01
Prosthodontics	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Oral Surgery	0.12	0.11	0.14	0.07	0.07	0.08	0.15	0.13	0.16

APPENDIX TABLE R-3.4

Medicaid Children's Use of Diagnostic, Preventive and Therapeutic Services:
by Race/Ethnicity and Preventive Medical Care Status, 1989
California

Service Category	Dental Services in 1989			Preventive Medical Care Visit in 1989			No Preventive Medical Care Visit in 1989		
	All Children	White	Nonwhite	All Children	White	Nonwhite	All Children	White	Nonwhite
Users of Diagnostic, Preventive or Therapeutic Services									
Total Claims/User P.Y.E.	1.52	1.44	1.55	1.32	1.24	1.34	1.60	1.52	1.64
Total Payments/User P.Y.E.	23.62	22.00	24.08	20.09	18.02	20.17	25.23	23.71	25.88
Diagnostic Services (Claims/User P.Y.E.)	0.70	0.71	0.70	0.61	0.62	0.61	0.74	0.74	0.75
X-ray Only	0.54	0.53	0.55	0.46	0.45	0.45	0.58	0.57	0.59
Clinical Oral Exam	0.16	0.17	0.16	0.16	0.17	0.15	0.16	0.17	0.16
Other	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Preventive Dental Services (Claims/User P.Y.E.)	0.06	0.06	0.06	0.04	0.04	0.04	0.07	0.07	0.07
Prophylaxis/Cleaning	0.05	0.05	0.05	0.04	0.04	0.03	0.06	0.06	0.06
Topical Application of Fluoride	0.16	0.16	0.16	0.14	0.15	0.14	0.16	0.17	0.16
Sealants	--	--	--	--	--	--	--	--	--
Other	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Therapeutic Services (Claims/User P.Y.E.)	0.75	0.67	0.78	0.67	0.57	0.69	0.79	0.71	0.83
Restoration of Carious Lesions	0.49	0.44	0.51	0.41	0.35	0.42	0.53	0.47	0.56
Crowns	0.06	0.05	0.06	0.07	0.06	0.07	0.05	0.04	0.05
Endodontics	0.05	0.04	0.05	0.06	0.05	0.06	0.05	0.04	0.05
Periodontics	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Prosthodontics	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Oral Surgery	0.13	0.11	0.14	0.11	0.09	0.11	0.14	0.13	0.15

APPENDIX TABLE R-3.4

Medicaid Children's Use of Diagnostic, Preventive and Therapeutic Services:
by Race/Ethnicity and Preventive Medical Care Status, 1992
California

Service Category	Dental Services in 1989			Preventive Medical Care Visits in 1992			Non Preventive Medical Care Visits in 1992		
	All Children	White	Nonwhite	All Children	White	Nonwhite	All Children	White	Nonwhite
Users of Diagnostic, Preventive or Therapeutic Services									
Total Claims/User P.Y.E.	1.65	1.73	1.64	1.47	1.54	1.45	1.74	1.82	1.73
Total Payments/User P.Y.E.	41.82	43.24	41.63	35.48	35.75	35.57	44.71	46.48	44.48
Diagnostic Services (Claims/User P.Y.E.)	0.70	0.78	0.67	0.63	0.72	0.60	0.73	0.80	0.71
X-ray Only	0.52	0.57	0.51	0.46	0.51	0.44	0.55	0.60	0.54
Clinical Oral Exam	0.17	0.20	0.16	0.18	0.21	0.16	0.17	0.20	0.16
Other	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Preventive Dental Services (Claims/User P.Y.E.)	0.06	0.07	0.06	0.05	0.05	0.04	0.07	0.07	0.06
Prophylaxis/Cleaning	0.05	0.06	0.05	0.04	0.04	0.04	0.06	0.07	0.06
Topical Application of Fluoride	0.14	0.16	0.14	0.14	0.16	0.13	0.15	0.16	0.14
Sealants	--	--	--	--	--	--	--	--	--
Other	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Therapeutic Services (Claims/User P.Y.E.)	0.90	0.89	0.91	0.79	0.77	0.81	0.94	0.94	0.95
Restoration of Carious Lesions	0.60	0.59	0.61	0.51	0.49	0.52	0.64	0.64	0.65
Crowns	0.06	0.06	0.06	0.07	0.06	0.07	0.06	0.06	0.06
Endodontics	0.06	0.06	0.07	0.07	0.06	0.07	0.06	0.06	0.06
Periodontics	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Prosthodontics	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Oral Surgery	0.14	0.14	0.15	0.12	0.11	0.12	0.15	0.15	0.16

APPENDIX TABLE R-3.4

Medicaid Children's Use of Diagnostic, Preventive and Therapeutic Services:
by Race/Ethnicity and Preventive Medical Care Status, 1989
Georgia

Service Category	Dental Services in 1989			Preventive Medical Care Visits in 1989			Non Preventive Medical Care Visits in 1989		
	All Children	White	Nonwhite	All Children	White	Nonwhite	All Children	White	Nonwhite
Users of Diagnostic, Preventive or Therapeutic Services									
Total Claims/User P.Y.E.	2.04	2.34	1.94	2.62	3.16	2.46	1.81	2.05	1.73
Total Payments/User P.Y.E.	43.91	51.34	41.38	54.38	67.52	50.54	39.78	45.82	37.57
Diagnostic Services (Claims/User P.Y.E.)	0.86	0.96	0.83	1.12	1.30	1.06	0.76	0.84	0.73
X-ray Only	0.40	0.43	0.39	0.50	0.57	0.48	0.36	0.38	0.35
Clinical Oral Exam	0.42	0.47	0.40	0.57	0.66	0.54	0.36	0.40	0.35
Other	0.04	0.06	0.04	0.05	0.08	0.04	0.04	0.06	0.03
Preventive Dental Services (Claims/User P.Y.E.)	0.42	0.47	0.40	0.57	0.67	0.54	0.36	0.40	0.34
Prophylaxis/Cleaning	0.41	0.45	0.39	0.56	0.65	0.53	0.35	0.38	0.34
Topical Application of Fluoride	0.36	0.38	0.35	0.50	0.56	0.48	0.31	0.32	0.30
Sealants	--	--	--	--	--	--	--	--	--
Other	0.01	0.02	0.01	0.01	0.02	0.01	0.01	0.02	0.01
Therapeutic Services (Claims/User P.Y.E.)	0.76	0.91	0.71	0.93	1.19	0.86	0.69	0.82	0.65
Restoration of Carious Lesions	0.51	0.59	0.49	0.65	0.81	0.61	0.46	0.52	0.44
Crowns	0.05	0.08	0.05	0.07	0.10	0.06	0.05	0.07	0.04
Endodontics	0.05	0.07	0.05	0.06	0.09	0.05	0.05	0.06	0.04
Periodontics	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Prosthodontics	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Oral Surgery	0.13	0.16	0.11	0.13	0.18	0.12	0.12	0.15	0.11

APPENDIX TABLE R-3.4

Medicaid Children's Use of Diagnostic, Preventive and Therapeutic Services: by Race/Ethnicity and Preventive Medical Care Status, 1992
Georgia

Service Category	Dental Services in 1989			Preventive Medical Care Visits in 1992			Non Preventive Medical Care Visits in 1992		
	All Children	White	Nonwhite	All Children	White	Nonwhite	All Children	White	Nonwhite
Users of Diagnostic, Preventive or Therapeutic Services									
Total Claims/User P.Y.E.	1.99	2.28	1.85	2.04	2.24	1.94	1.97	2.29	1.82
Total Payments/User P.Y.E.	45.39	53.67	41.41	44.26	50.28	41.40	45.89	55.12	41.41
Diagnostic Services (Claims/User P.Y.E.)	0.85	0.92	0.81	0.89	0.94	0.87	0.83	0.92	0.79
X-ray Only	0.38	0.40	0.38	0.38	0.38	0.39	0.38	0.41	0.37
Clinical Oral Exam	0.41	0.45	0.39	0.46	0.49	0.44	0.38	0.43	0.36
Other	0.06	0.08	0.05	0.05	0.07	0.04	0.06	0.08	0.05
Preventive Dental Services (Claims/User P.Y.E.)	0.41	0.45	0.39	0.45	0.48	0.44	0.39	0.43	0.36
Prophylaxis/Cleaning	0.39	0.43	0.38	0.44	0.47	0.43	0.37	0.42	0.35
Topical Application of Fluoride	0.36	0.38	0.35	0.40	0.41	0.40	0.34	0.37	0.33
Sealants	--	--	--	--	--	--	--	--	--
Other	0.01	0.02	0.01	0.01	0.01	0.01	0.01	0.02	0.01
Therapeutic Services (Claims/User P.Y.E.)	0.73	0.90	0.65	0.69	0.82	0.63	0.75	0.94	0.66
Restoration of Carious Lesions	0.45	0.53	0.41	0.43	0.49	0.40	0.46	0.55	0.41
Crowns	0.06	0.09	0.05	0.06	0.09	0.05	0.06	0.09	0.05
Endodontics	0.06	0.09	0.05	0.06	0.08	0.05	0.07	0.09	0.05
Periodontics	0.01	0.01	0.01	0.00	0.00	0.00	0.01	0.01	0.01
Prosthodontics	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Oral Surgery	0.12	0.16	0.11	0.10	0.12	0.09	0.14	0.18	0.12

APPENDIX TABLE R-3.4

Medicaid Children's Use of Diagnostic, Preventive and Therapeutic Services: by Race/Ethnicity and Preventive Medical Care Status, 1989
Michigan

Service Category	Dental Services in 1989			Preventive Medical Care Visits in 1989			Non Preventive Medical Care Visits in 1989		
	All Children	White	Nonwhite	All Children	White	Nonwhite	All Children	White	Nonwhite
Users of Diagnostic, Preventive or Therapeutic Services									
Total Claims/User P.Y.E.	1.64	1.85	1.37	1.61	1.75	1.42	1.66	1.90	1.34
Total Payments/User P.Y.E.	25.52	29.20	20.65	24.17	27.02	20.52	26.18	30.24	20.72
Diagnostic Services (Claims/User P.Y.E.)	0.71	0.77	0.63	0.71	0.74	0.67	0.71	0.78	0.61
X-ray Only	0.34	0.36	0.31	0.33	0.34	0.31	0.34	0.37	0.31
Clinical Oral Exam	0.37	0.40	0.32	0.38	0.40	0.35	0.36	0.40	0.31
Other	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Preventive Dental Services (Claims/User P.Y.E.)	0.36	0.40	0.32	0.37	0.40	0.35	0.36	0.40	0.30
Prophylaxis/Cleaning	0.36	0.39	0.31	0.37	0.39	0.35	0.35	0.39	0.30
Topical Application of Fluoride	0.21	0.22	0.20	0.23	0.23	0.23	0.20	0.21	0.19
Sealants	--	--	--	--	--	--	--	--	--
Other	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Therapeutic Services (Claims/User P.Y.E.)	0.57	0.69	0.42	0.52	0.62	0.41	0.60	0.72	0.43
Restoration of Carious Lesions	0.47	0.56	0.34	0.43	0.50	0.33	0.49	0.59	0.35
Crowns	0.02	0.02	0.01	0.02	0.02	0.01	0.01	0.02	0.01
Endodontics	0.02	0.03	0.01	0.02	0.03	0.02	0.02	0.03	0.01
Periodontics	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Prosthodontics	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Oral Surgery	0.07	0.08	0.05	0.06	0.06	0.04	0.07	0.09	0.06

APPENDIX TABLE R-3.4

Medicaid Children's Use of Diagnostic, Preventive and Therapeutic Services:
by Race/Ethnicity and Preventive Medical Care Status, 1992
Michigan

Service Category	Dental Services in 1989			Preventive Medical Care Visits in 1992			Non Preventive Medical Care Visits in 1992		
	All Children	White	Nonwhite	All Children	White	Nonwhite	All Children	White	Nonwhite
Users of Diagnostic, Preventive or Therapeutic Services									
Total Claims/User P.Y.E.	1.66	1.80	1.44	1.49	1.54	1.41	1.76	1.95	1.45
Total Payments/User P.Y.E.	27.65	30.27	23.34	24.32	25.59	22.28	29.58	32.94	23.98
Diagnostic Services (Claims/User P.Y.E.)	0.70	0.73	0.65	0.65	0.64	0.65	0.73	0.78	0.65
X-ray Only	0.32	0.33	0.30	0.28	0.27	0.29	0.35	0.37	0.31
Clinical Oral Exam	0.38	0.40	0.35	0.37	0.37	0.36	0.38	0.41	0.34
Other	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Preventive Dental Services (Claims/User P.Y.E.)	0.43	0.46	0.39	0.40	0.40	0.39	0.45	0.49	0.38
Prophylaxis/Cleaning	0.36	0.38	0.33	0.35	0.35	0.35	0.37	0.39	0.32
Topical Application of Fluoride	0.21	0.21	0.21	0.21	0.20	0.22	0.21	0.21	0.19
Sealants	0.07	0.08	0.05	0.05	0.05	0.05	0.08	0.09	0.06
Other	0.07	0.08	0.05	0.05	0.05	0.05	0.08	0.10	0.06
Therapeutic Services (Claims/User P.Y.E.)	0.53	0.61	0.40	0.45	0.50	0.36	0.58	0.68	0.42
Restoration of Carious Lesions	0.43	0.49	0.32	0.36	0.40	0.29	0.47	0.55	0.33
Crowns	0.02	0.02	0.01	0.02	0.02	0.02	0.01	0.02	0.01
Endodontics	0.02	0.03	0.02	0.02	0.03	0.02	0.02	0.03	0.02
Periodontics	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Prosthodontics	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Oral Surgery	0.07	0.07	0.05	0.05	0.05	0.04	0.08	0.09	0.06

APPENDIX TABLE R-3.4

Medicaid Children's Use of Diagnostic, Preventive and Therapeutic Services: by Race/Ethnicity and Preventive Medical Care Status, 1989
Tennessee

Service Category	Dental Services in 1989			Preventive Medical Care Visits in 1989			Non Preventive Medical Care Visits in 1989		
	All Children	White	Nonwhite	All Children	White	Nonwhite	All Children	White	Nonwhite
Users of Diagnostic, Preventive or Therapeutic Services									
Total Claims/User P.Y.E.	2.45	2.52	2.37	1.97	2.14	1.74	2.63	2.68	2.59
Total Payments/User P.Y.E.	40.11	44.00	35.62	32.70	37.60	26.15	42.86	46.58	38.80
Diagnostic Services (Claims/User P.Y.E.)	1.23	1.13	1.34	0.95	0.94	0.97	1.33	1.21	1.46
X-ray Only	0.81	0.74	0.91	0.58	0.56	0.61	0.90	0.81	1.01
Clinical Oral Exam	0.41	0.40	0.43	0.37	0.38	0.36	0.43	0.40	0.46
Other	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Preventive Dental Services (Claims/User P.Y.E.)	0.40	0.38	0.42	0.35	0.35	0.34	0.41	0.39	0.44
Prophylaxis/Cleaning	0.39	0.38	0.41	0.35	0.35	0.34	0.41	0.39	0.44
Topical Application of Fluoride	0.35	0.32	0.39	0.31	0.30	0.32	0.37	0.33	0.42
Sealants	0.30	0.18	0.45	0.16	0.13	0.21	0.36	0.20	0.54
Other	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Therapeutic Services (Claims/User P.Y.E.)	0.83	1.01	0.62	0.67	0.84	0.43	0.89	1.07	0.68
Restoration of Carious Lesions	0.52	0.61	0.42	0.38	0.48	0.26	0.57	0.66	0.47
Crowns	0.10	0.14	0.06	0.12	0.16	0.07	0.09	0.13	0.06
Endodontics	0.08	0.10	0.05	0.08	0.10	0.05	0.08	0.11	0.06
Periodontics	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Prosthodontics	0.01	0.01	0.00	0.00	0.00	0.00	0.01	0.01	0.01
Oral Surgery	0.12	0.15	0.08	0.08	0.10	0.05	0.13	0.17	0.09

APPENDIX TABLE R-3.4

Medicaid Children's Use of Diagnostic, Preventive and Therapeutic Services: by Race/Ethnicity and Preventive Medical Care Status, 1992
Tennessee

Service Category	Dental Services in 1989			Preventive Medical Care Visits in 1992			Non Preventive Medical Care Visits in 1992		
	All Children	White	Nonwhite	All Children	White	Nonwhite	All Children	White	Nonwhite
Users of Diagnostic, Preventive or Therapeutic Services									
Total Claims/User P.Y.E.	2.24	2.23	2.25	1.71	1.74	1.66	2.48	2.49	2.47
Total Payments/User P.Y.E.	40.47	42.98	36.59	31.31	33.29	27.54	44.64	47.94	40.04
Diagnostic Services (Claims/User P.Y.E.)	1.03	0.93	1.18	0.75	0.71	0.83	1.15	1.04	1.32
X-ray Only	0.59	0.53	0.69	0.38	0.36	0.43	0.68	0.61	0.79
Clinical Oral Exam	0.44	0.40	0.49	0.36	0.35	0.40	0.47	0.43	0.53
Other	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Preventive Dental Services (Claims/User P.Y.E.)	0.42	0.38	0.48	0.35	0.33	0.39	0.46	0.41	0.52
Prophylaxis/Cleaning	0.42	0.38	0.48	0.35	0.32	0.38	0.45	0.41	0.52
Topical Application of Fluoride	0.37	0.33	0.44	0.31	0.29	0.35	0.40	0.35	0.48
Sealants	0.32	0.19	0.53	0.14	0.11	0.18	0.41	0.23	0.66
Other	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
Therapeutic Services (Claims/User P.Y.E.)	0.79	0.92	0.59	0.62	0.71	0.45	0.87	1.03	0.64
Restoration of Carious Lesions	0.45	0.51	0.35	0.32	0.36	0.25	0.51	0.59	0.39
Crowns	0.12	0.15	0.07	0.14	0.16	0.09	0.11	0.14	0.06
Endodontics	0.10	0.11	0.07	0.09	0.10	0.06	0.10	0.12	0.07
Periodontics	0.00	0.00	0.01	0.00	0.00	0.00	0.01	0.00	0.01
Prosthodontics	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Oral Surgery	0.12	0.15	0.09	0.07	0.08	0.05	0.15	0.18	0.10

APPENDIX TABLE R-3.5

Medicaid Children's Use of Diagnostic, Preventive and Therapeutic Services:
by Metro Status and Preventive Medical Care Status, 1989
California

	Dental Services in 1989				Preventive Medical Care Visits in 1989				Non Preventive Medical Care Visits in 1989			
Service Category	All Children	Urban	Suburban	Rural	All Children	Urban	Suburban	Rural	All Children	Urban	Suburban	Rural
Users of Diagnostic, Preventive or Therapeutic Services												
Total Claims/User P.Y.E.	1.52	1.59	0.53	1.21	1.32	1.38	0.46	1.06	1.60	1.68	0.56	1.27
Total Payments/User P.Y.E.	23.62	24.77	8.29	18.35	20.09	20.83	7.10	15.78	25.23	26.60	8.84	19.43
Diagnostic Services (Claims/User P.Y.E.)	0.70	0.74	0.25	0.57	0.61	0.65	0.21	0.51	0.74	0.78	0.26	0.60
X-ray Only	0.54	0.57	0.19	0.43	0.46	0.48	0.16	0.36	0.58	0.61	0.21	0.46
Clinical Oral Exam	0.16	0.17	0.06	0.14	0.16	0.17	0.05	0.14	0.16	0.17	0.06	0.13
Other	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Preventive Dental Services (Claims/User P.Y.E.)	0.06	0.07	0.02	0.05	0.04	0.04	0.01	0.03	0.07	0.07	0.02	0.05
Prophylaxis/Cleaning	0.05	0.06	0.02	0.04	0.04	0.04	0.01	0.03	0.06	0.07	0.02	0.04
Topical Application of Fluoride	0.16	0.16	0.06	0.15	0.14	0.15	0.05	0.14	0.16	0.16	0.06	0.15
Sealants	--	--	--	--	--	--	--	--	--	--	--	--
Other	0.01	0.01	0.00	0.01	0.01	0.01	0.00	0.00	0.01	0.01	0.00	0.01
Therapeutic Services (Claims/User P.Y.E.)	0.75	0.78	0.27	0.59	0.67	0.69	0.24	0.52	0.79	0.83	0.28	0.62
Restoration of Carious Lesions	0.49	0.51	0.17	0.39	0.41	0.42	0.15	0.32	0.53	0.55	0.18	0.42
Crowns	0.06	0.06	0.02	0.04	0.07	0.07	0.02	0.05	0.05	0.05	0.02	0.04
Endodontics	0.05	0.06	0.02	0.03	0.06	0.07	0.02	0.04	0.05	0.05	0.01	0.03
Periodontics	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Prosthodontics	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Oral Surgery	0.13	0.13	0.05	0.10	0.11	0.11	0.04	0.08	0.14	0.14	0.05	0.10

APPENDIX TABLE R-3.5

Medicaid Children's Use of Diagnostic, Preventive and Therapeutic Services:
by Metro Status and Preventive Medical Care Status, 1992
California

Service Category	Dental Services in 1989				Preventive Medical Care Visits in 1992				Non Preventive Medical Care Visits in 1992			
	All Children	Urban	Suburban	Rural	All Children	Urban	Suburban	Rural	All Children	Urban	Suburban	Rural
Users of Diagnostic, Preventive or Therapeutic Services												
Total Claims/User P.Y.E.	1.65	1.78	0.34	1.06	1.47	1.57	0.30	0.94	1.74	1.87	0.35	1.10
Total Payments/User P.Y.E.	41.82	45.41	8.21	25.31	35.48	38.00	7.16	21.89	44.71	48.83	8.69	26.57
Diagnostic Services (Claims/User P.Y.E.)	0.70	0.75	0.14	0.46	0.63	0.68	0.13	0.42	0.73	0.78	0.15	0.48
X-ray Only	0.52	0.56	0.11	0.34	0.46	0.49	0.09	0.29	0.55	0.59	0.12	0.35
Clinical Oral Exam	0.17	0.19	0.03	0.12	0.18	0.19	0.03	0.13	0.17	0.19	0.03	0.12
Other	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Preventive Dental Services (Claims/User P.Y.E.)	0.06	0.07	0.01	0.04	0.05	0.05	0.01	0.03	0.07	0.08	0.01	0.04
Prophylaxis/Cleaning	0.05	0.06	0.01	0.03	0.04	0.04	0.01	0.02	0.06	0.07	0.01	0.03
Topical Application of Fluoride	0.14	0.15	0.03	0.11	0.14	0.15	0.03	0.10	0.15	0.15	0.03	0.11
Sealants	--	--	--	--	--	--	--	--	--	--	--	--
Other	0.01	0.01	0.00	0.00	0.01	0.01	0.00	0.00	0.01	0.01	0.00	0.00
Therapeutic Services (Claims/User P.Y.E.)	0.90	0.96	0.18	0.56	0.79	0.84	0.17	0.49	0.94	1.01	0.19	0.59
Restoration of Carious Lesions	0.60	0.65	0.12	0.37	0.51	0.54	0.10	0.30	0.64	0.69	0.13	0.39
Crowns	0.06	0.07	0.01	0.04	0.07	0.07	0.02	0.06	0.06	0.06	0.01	0.03
Endodontics	0.06	0.07	0.01	0.03	0.07	0.08	0.01	0.03	0.06	0.07	0.01	0.03
Periodontics	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Prosthodontics	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Oral Surgery	0.14	0.15	0.03	0.09	0.12	0.12	0.03	0.08	0.15	0.16	0.04	0.10

APPENDIX TABLE R-3.5

Medicaid Children's Use of Diagnostic, Preventive and Therapeutic Services: by Metro Status and Preventive Medical Care Status, 1989
Georgia

Service Category	Dental Services in 1989				Preventive Medical Care Visits in 1989				Non Preventive Medical Care Visits in 1989			
	All Children	Urban	Suburban	Rural	All Children	Urban	Suburban	Rural	All Children	Urban	Suburban	Rural
Users of Diagnostic, Preventive or Therapeutic Services												
Total Claims/User P.Y.E.	2.04	1.09	1.37	2.40	2.62	1.25	1.74	3.04	1.81	1.04	1.25	2.08
Total Payments/User P.Y.E.	43.91	22.82	29.64	51.80	54.38	24.48	36.35	63.54	39.78	22.30	27.45	45.99
Diagnostic Services (Claims/User P.Y.E.)	0.86	0.51	0.59	0.98	1.12	0.60	0.76	1.25	0.76	0.48	0.53	0.84
X-ray Only	0.40	0.26	0.28	0.44	0.50	0.31	0.35	0.54	0.36	0.25	0.25	0.39
Clinical Oral Exam	0.42	0.23	0.29	0.48	0.57	0.28	0.39	0.65	0.36	0.22	0.25	0.40
Other	0.04	0.02	0.03	0.06	0.05	0.01	0.03	0.07	0.04	0.02	0.03	0.05
Preventive Dental Services (Claims/User P.Y.E.)	0.42	0.22	0.29	0.49	0.57	0.27	0.39	0.65	0.36	0.20	0.25	0.40
Prophylaxis/Cleaning	0.41	0.21	0.28	0.47	0.56	0.26	0.38	0.64	0.35	0.20	0.25	0.39
Topical Application of Fluoride	0.36	0.18	0.25	0.42	0.50	0.24	0.35	0.57	0.31	0.16	0.22	0.34
Sealants	--	--	--	--	--	--	--	--	--	--	--	--
Other	0.01	0.00	0.01	0.01	0.01	0.00	0.01	0.01	0.01	0.00	0.01	0.01
Therapeutic Services (Claims/User P.Y.E.)	0.76	0.37	0.50	0.93	0.93	0.38	0.59	1.13	0.69	0.36	0.46	0.84
Restoration of Carious Lesions	0.51	0.25	0.33	0.63	0.65	0.26	0.42	0.80	0.46	0.24	0.30	0.55
Crowns	0.05	0.02	0.04	0.06	0.07	0.03	0.05	0.07	0.05	0.02	0.04	0.05
Endodontics	0.05	0.03	0.03	0.07	0.06	0.03	0.04	0.08	0.05	0.03	0.03	0.06
Periodontics	0.01	0.00	0.01	0.01	0.01	0.00	0.01	0.01	0.01	0.01	0.01	0.01
Prosthodontics	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Oral Surgery	0.13	0.06	0.08	0.16	0.13	0.05	0.08	0.16	0.12	0.07	0.08	0.15

APPENDIX TABLE R-3.5

Medicaid Children's Use of Diagnostic, Preventive and Therapeutic Services:
by Metro Status and Preventive Medical Care Status, 1992
Georgia

Service Category	Dental Services in 1989				Preventive Medical Care Visits in 1992				Non Preventive Medical Care Visits in 1992			
	All Children	Urban	Suburban	Rural	All Children	Urban	Suburban	Rural	All Children	Urban	Suburban	Rural
Users of Diagnostic, Preventive or Therapeutic Services												
Total Claims/User P.Y.E.	1.99	1.39	1.14	2.28	2.04	1.41	1.05	2.39	1.97	1.38	1.17	2.22
Total Payments/User P.Y.E.	45.39	31.89	25.88	51.95	44.26	30.51	22.81	52.01	45.89	32.47	27.10	51.92
Diagnostic Services (Claims/User P.Y.E.)	0.85	0.62	0.49	0.94	0.89	0.65	0.47	1.02	0.83	0.60	0.51	0.91
X-ray Only	0.38	0.30	0.22	0.41	0.38	0.32	0.20	0.42	0.38	0.30	0.23	0.41
Clinical Oral Exam	0.41	0.27	0.24	0.46	0.46	0.30	0.24	0.53	0.38	0.26	0.24	0.42
Other	0.06	0.04	0.03	0.07	0.05	0.03	0.02	0.07	0.06	0.04	0.03	0.08
Preventive Dental Services (Claims/User P.Y.E.)	0.41	0.27	0.24	0.46	0.45	0.30	0.24	0.53	0.39	0.26	0.24	0.43
Prophylaxis/Cleaning	0.39	0.27	0.23	0.45	0.44	0.29	0.24	0.52	0.37	0.25	0.23	0.41
Topical Application of Fluoride	0.36	0.24	0.22	0.40	0.40	0.27	0.22	0.46	0.34	0.23	0.22	0.37
Sealants	--	--	--	--	--	--	--	--	--	--	--	--
Other	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.01	0.01	0.01	0.01	0.01
Therapeutic Services (Claims/User P.Y.E.)	0.73	0.50	0.40	0.87	0.69	0.46	0.35	0.84	0.75	0.52	0.43	0.89
Restoration of Carious Lesions	0.45	0.30	0.24	0.54	0.43	0.28	0.21	0.53	0.46	0.31	0.25	0.55
Crowns	0.06	0.04	0.04	0.07	0.06	0.04	0.03	0.07	0.06	0.04	0.04	0.07
Endodontics	0.06	0.05	0.03	0.08	0.06	0.05	0.02	0.08	0.07	0.05	0.03	0.08
Periodontics	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.01
Prosthodontics	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Oral Surgery	0.12	0.09	0.07	0.14	0.10	0.07	0.05	0.12	0.14	0.10	0.08	0.16

APPENDIX TABLE R-3.5

Medicaid Children's Use of Diagnostic, Preventive and Therapeutic Services:
by Metro Status and Preventive Medical Care Status, 1989
Michigan

Service Category	Dental Services in 1989				Preventive Medical Care Visits in 1989				Non Preventive Medical Care Visits in 1989			
	All Children	Urban	Suburban	Rural	All Children	Urban	Suburban	Rural	All Children	Urban	Suburban	Rural
Users of Diagnostic, Preventive or Therapeutic Services												
Total Claims/User P.Y.E.	1.64	1.46	1.03	1.88	1.61	1.40	1.08	1.88	1.66	1.48	1.00	1.88
Total Payments/User P.Y.E.	25.52	22.80	15.84	29.59	24.17	20.05	16.26	29.40	26.18	23.91	15.63	29.68
Diagnostic Services (Claims/User P.Y.E.)	0.71	0.67	0.45	0.76	0.71	0.67	0.48	0.76	0.71	0.66	0.43	0.75
X-ray Only	0.34	0.33	0.21	0.35	0.33	0.31	0.22	0.33	0.34	0.33	0.21	0.35
Clinical Oral Exam	0.37	0.34	0.23	0.41	0.38	0.36	0.25	0.43	0.36	0.33	0.22	0.40
Other	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Preventive Dental Services (Claims/User P.Y.E.)	0.36	0.33	0.23	0.40	0.37	0.35	0.25	0.41	0.36	0.32	0.22	0.39
Prophylaxis/Cleaning	0.36	0.33	0.23	0.39	0.37	0.34	0.25	0.41	0.35	0.32	0.22	0.39
Topical Application of Fluoride	0.21	0.21	0.13	0.21	0.23	0.24	0.15	0.23	0.20	0.20	0.12	0.20
Sealants	--	--	--	--	--	--	--	--	--	--	--	--
Other	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Therapeutic Services (Claims/User P.Y.E.)	0.57	0.47	0.35	0.73	0.52	0.38	0.35	0.71	0.60	0.50	0.35	0.74
Restoration of Carious Lesions	0.47	0.38	0.29	0.60	0.43	0.31	0.29	0.58	0.49	0.41	0.29	0.61
Crowns	0.02	0.01	0.01	0.02	0.02	0.01	0.01	0.03	0.01	0.01	0.01	0.01
Endodontics	0.02	0.02	0.01	0.02	0.02	0.02	0.01	0.03	0.02	0.02	0.01	0.02
Periodontics	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Prosthodontics	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Oral Surgery	0.07	0.06	0.04	0.09	0.06	0.04	0.04	0.08	0.07	0.06	0.04	0.09

APPENDIX TABLE R-3.5

Medicaid Children's Use of Diagnostic, Preventive and Therapeutic Services: by Metro Status and Preventive Medical Care Status, 1992
Michigan

Service Category	Dental Services in 1989				Preventive Medical Care Visits in 1992				Non Preventive Medical Care Visits in 1992			
	All Children	Urban	Suburban	Rural	All Children	Urban	Suburban	Rural	All Children	Urban	Suburban	Rural
Users of Diagnostic, Preventive or Therapeutic Services												
Total Claims/User P.Y.E.	1.66	1.64	0.88	1.80	1.49	1.49	0.83	1.56	1.76	1.72	0.92	1.93
Total Payments/User P.Y.E.	27.65	27.34	14.58	30.24	24.32	24.00	13.46	26.16	29.58	29.21	15.24	32.44
Diagnostic Services (Claims/User P.Y.E.)	0.70	0.73	0.37	0.70	0.65	0.68	0.36	0.63	0.73	0.75	0.38	0.74
X-ray Only	0.32	0.34	0.17	0.31	0.28	0.31	0.15	0.26	0.35	0.36	0.18	0.34
Clinical Oral Exam	0.38	0.38	0.20	0.39	0.37	0.37	0.20	0.38	0.38	0.39	0.20	0.40
Other	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Preventive Dental Services (Claims/User P.Y.E.)	0.43	0.42	0.24	0.45	0.40	0.40	0.23	0.40	0.45	0.43	0.24	0.49
Prophylaxis/Cleaning	0.36	0.36	0.19	0.37	0.35	0.36	0.19	0.35	0.37	0.37	0.19	0.38
Topical Application of Fluoride	0.21	0.23	0.11	0.19	0.21	0.24	0.11	0.18	0.21	0.23	0.11	0.19
Sealants	0.07	0.05	0.04	0.08	0.05	0.04	0.03	0.05	0.08	0.06	0.04	0.10
Other	0.07	0.06	0.04	0.09	0.05	0.04	0.03	0.05	0.08	0.06	0.05	0.10
Therapeutic Services (Claims/User P.Y.E.)	0.53	0.49	0.28	0.64	0.45	0.40	0.25	0.53	0.58	0.54	0.29	0.70
Restoration of Carious Lesions	0.43	0.39	0.22	0.52	0.36	0.32	0.20	0.43	0.47	0.43	0.23	0.57
Crowns	0.02	0.01	0.01	0.02	0.02	0.02	0.01	0.02	0.01	0.01	0.01	0.01
Endodontics	0.02	0.02	0.01	0.02	0.02	0.02	0.01	0.02	0.02	0.02	0.01	0.02
Periodontics	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Prosthodontics	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Oral Surgery	0.07	0.06	0.03	0.08	0.05	0.04	0.03	0.06	0.08	0.07	0.04	0.09

APPENDIX TABLE R-3.5

Medicaid Children's Use of Diagnostic, Preventive and Therapeutic Services: by Metro Status and Preventive Medical Care Status, 1989
Tennessee

Service Category	Dental Services in 1989				Preventive Medical Care Visits in 1989				Non Preventive Medical Care Visits in 1989			
	All Children	Urban	Suburban	Rural	All Children	Urban	Suburban	Rural	All Children	Urban	Suburban	Rural
Users of Diagnostic, Preventive or Therapeutic Services												
Total Claims/User P.Y.E.	2.45	--	2.42	2.52	1.97	--	1.86	2.14	2.63	--	2.61	2.68
Total Payments/User P.Y.E.	40.11	--	38.57	43.33	32.70	--	29.97	37.33	42.86	--	41.45	46.02
Diagnostic Services (Claims/User P.Y.E.)	1.23	--	1.28	1.12	0.95	--	0.97	0.93	1.33	--	1.38	1.21
X-ray Only	0.81	--	0.86	0.72	0.58	--	0.61	0.54	0.90	--	0.94	0.81
Clinical Oral Exam	0.41	--	0.42	0.40	0.37	--	0.36	0.39	0.43	--	0.44	0.41
Other	0.00	--	0.00	0.00	0.00	--	0.00	0.00	0.00	--	0.00	0.00
Preventive Dental Services (Claims/User P.Y.E.)	0.40	--	0.40	0.38	0.35	--	0.34	0.36	0.41	--	0.42	0.39
Prophylaxis/Cleaning	0.39	--	0.40	0.38	0.35	--	0.34	0.36	0.41	--	0.42	0.39
Topical Application of Fluoride	0.35	--	0.37	0.33	0.31	--	0.31	0.32	0.37	--	0.39	0.34
Sealants	0.30	--	0.36	0.18	0.16	--	0.17	0.15	0.36	--	0.43	0.20
Other	0.00	--	0.00	0.00	0.00	--	0.00	0.00	0.00	--	0.00	0.00
Therapeutic Services (Claims/User P.Y.E.)	0.83	--	0.74	1.01	0.67	--	0.56	0.85	0.89	--	0.81	1.07
Restoration of Carious Lesions	0.52	--	0.47	0.63	0.38	--	0.31	0.51	0.57	--	0.52	0.69
Crowns	0.10	--	0.09	0.12	0.12	--	0.11	0.15	0.09	--	0.09	0.11
Endodontics	0.08	--	0.07	0.10	0.08	--	0.06	0.10	0.08	--	0.07	0.10
Periodontics	0.00	--	0.00	0.00	0.00	--	0.00	0.00	0.00	--	0.00	0.00
Prosthodontics	0.01	--	0.01	0.00	0.00	--	0.00	0.00	0.01	--	0.01	0.01
Oral Surgery	0.12	--	0.10	0.14	0.08	--	0.07	0.10	0.13	--	0.12	0.16

APPENDIX TABLE R-3.5

Medicaid Children's Use of Diagnostic, Preventive and Therapeutic Services:
by Metro Status and Preventive Medical Care Status, 1992
Tennessee

Service Category	Dental Services in 1989				Preventive Medical Care Visits in 1992				Non Preventive Medical Care Visits in 1992			
	All Children	Urban	Suburban	Rural	All Children	Urban	Suburban	Rural	All Children	Urban	Suburban	Rural
Users of Diagnostic, Preventive or Therapeutic Services												
Total Claims/User P.Y.E.	2.24	2.25	1.54	2.26	1.71	1.50	1.34	1.73	2.48	2.49	1.63	2.55
Total Payments/User P.Y.E.	40.47	34.93	28.23	43.53	31.31	22.76	24.38	33.38	44.64	38.77	29.83	48.97
Diagnostic Services (Claims/User P.Y.E.)	1.03	1.22	0.71	0.93	0.75	0.78	0.59	0.69	1.15	1.36	0.75	1.06
X-ray Only	0.59	0.69	0.42	0.52	0.38	0.37	0.32	0.33	0.68	0.79	0.45	0.62
Clinical Oral Exam	0.44	0.53	0.29	0.41	0.36	0.41	0.27	0.36	0.47	0.56	0.30	0.44
Other	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Preventive Dental Services (Claims/User P.Y.E.)	0.42	0.52	0.28	0.39	0.35	0.40	0.26	0.33	0.46	0.55	0.29	0.42
Prophylaxis/Cleaning	0.42	0.52	0.28	0.39	0.35	0.40	0.26	0.33	0.45	0.55	0.29	0.42
Topical Application of Fluoride	0.37	0.47	0.25	0.33	0.31	0.36	0.23	0.29	0.40	0.50	0.26	0.36
Sealants	0.32	0.64	0.18	0.22	0.14	0.17	0.11	0.11	0.41	0.79	0.21	0.28
Other	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
Therapeutic Services (Claims/User P.Y.E.)	0.79	0.51	0.55	0.94	0.62	0.32	0.48	0.71	0.87	0.57	0.58	1.06
Restoration of Carious Lesions	0.45	0.31	0.31	0.53	0.32	0.18	0.24	0.37	0.51	0.35	0.34	0.62
Crowns	0.12	0.05	0.09	0.14	0.14	0.05	0.11	0.16	0.11	0.05	0.08	0.13
Endodontics	0.10	0.06	0.07	0.12	0.09	0.04	0.07	0.10	0.10	0.06	0.06	0.13
Periodontics	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00
Prosthodontics	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Oral Surgery	0.12	0.08	0.09	0.14	0.07	0.05	0.06	0.08	0.15	0.10	0.10	0.18

APPENDIX TABLE R-2.1

Medicaid Children's Use of Dental Care by Age and Preventive Medical Care Status: Percent of Children Receiving Care, 1989 and 1992, California

Service Category	Dental Services in 1989						Preventive Medical Care Visit in 1989						No Preventive Medical Care Visit in 1989					
	All Children	< 12 mos.	1-2 yrs.	3-6 yrs.	7-12 yrs.	13-20 yrs.	All Children	< 12 mos.	1-2 yrs.	3-6 yrs.	7-12 yrs.	13-20 yrs.	All Children	< 12 mos.	1-2 yrs.	3-6 yrs.	7-12 yrs.	13-20 yrs.
Any Dental Care	20.0	0.1	2.6	22.6	31.1	23.5	19.9	0.1	3.1	31.3	44.3	35.9	20.1	0.0	1.9	1.8	2.9	2.2
Any Diagnostic Services	1.9	0.1	2.2	21.0	29.1	21.5	18.6	0.1	2.7	2.9	41.8	33.5	18.5	0.0	1.6	16.6	27.2	20.1
Any Preventive Services	4.0	0.0	0.1	2.2	3.9	8.9	3.3	0.0	0.1	3.0	5.6	13.5	4.3	0.0	0.1	1.8	3.6	8.3
Any Therapeutic Services	11.8	0.0	1.2	12.5	18.9	14.2	11.1	0.0	1.5	16.7	26.3	21.3	12.0	0.0	0.9	10.2	17.8	13.3
Any Diagnostic, Preventive, or Therapeutic Services	19.7	0.1	2.5	22.1	30.6	23.2	19.5	0.1	3.1	30.7	43.5	35.6	19.8	0.0	1.8	17.6	28.7	21.6
Any Emergency Services	0.7	0.0	0.1	0.5	0.8	1.2	0.6	0.0	0.1	0.7	1.1	1.8	0.7	0.0	0.0	0.4	0.7	1.1
Any Orthodontic Services	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Service Category	Dental Services in 1992						Preventive Medical Care Visit in 1992						No Preventive Medical Care Visit in 1992					
	All Children	< 12 mos.	1-2 yrs.	3-6 yrs.	7-12 yrs.	13-20 yrs.	All Children	< 12 mos.	1-2 yrs.	3-6 yrs.	7-12 yrs.	13-20 yrs.	All Children	< 12 mos.	1-2 yrs.	3-6 yrs.	7-12 yrs.	13-20 yrs.
Any Dental Care	20.6	0.1	2.7	23.3	32.4	24.6	20.1	0.1	3.1	34.3	48.9	39.3	20.8	0.1	2.2	18.1	30.0	22.6
Any Diagnostic Services	18.4	0.1	2.4	21.0	29.0	21.8	18.3	0.1	2.7	31.3	44.8	35.7	18.5	0.1	2.0	16.1	26.7	19.9
Any Preventive Services	4.3	0.0	0.2	2.4	4.2	9.4	3.6	0.0	0.2	3.5	6.6	15.5	4.5	0.0	0.1	1.8	3.8	8.6
Any Therapeutic Services	13.1	0.0	1.3	13.5	21.3	16.3	12.1	0.0	1.4	19.3	31.9	25.8	13.5	0.0	1.1	10.8	19.8	15.0
Any Diagnostic, Preventive, or Therapeutic Services	19.6	0.1	2.6	22.2	30.7	23.4	19.3	0.1	3.0	32.8	46.9	37.8	19.8	0.1	2.1	17.1	28.3	21.5
Any Emergency Services	0.7	0.0	0.1	0.5	0.8	1.4	0.6	0.0	0.0	0.1	1.1	2.2	0.8	0.0	0.1	0.4	0.7	1.3
Any Orthodontic Services	0.5	0.0	0.0	0.0	0.8	1.0	0.3	0.0	0.0	0.0	1.1	1.6	0.6	0.0	0.0	0.0	0.7	1.0

APPENDIX TABLE R-2.1

Medicaid Children's Use of Dental Care by Age and Preventive Medical Care Status:
Percent of Children Receiving Care, 1989 and 1992, Georgia

Service Category	Dental Services in 1989						Preventive Medical Care Visit in 1989						No Preventive Medical Care Visit in 1989					
	All Children	< 12 mos.	1-2 yrs.	3-6 yrs.	7-12 yrs.	13-20 yrs.	All Children	< 12 mos.	1-2 yrs.	3-6 yrs.	7-12 yrs.	13-20 yrs.	All Children	< 12 mos.	1-2 yrs.	3-6 yrs.	7-12 yrs.	13-20 yrs.
Any Dental Care	27.9	0.1	2 8	34 4	40 6	33.3	41.1	0.1	3 6	59.3	69.3	64 5	23.6	0.1	2.4	23 9	34.0	28 1
Any Diagnostic Services	26.7	0.1	2.7	33.1	39 0	31.3	40.0	0.1	3 5	57.7	67.8	62.3	22.3	0.1	2.2	22.7	32.4	26.1
Any Preventive Services	24.2	0.1	1.8	30 8	37.3	26 2	37.5	0.0	2.3	54 6	65.8	56.2	19.8	0.1	1.4	20 8	30.7	21 2
Any Therapeutic Services	13 8	0.1	0 8	13 4	20.7	19.3	18.7	0.1	0 9	21.3	34.8	35.7	12.3	0.1	0.7	10 1	17.4	16.6
Any Diagnostic, Preventive, or Therapeutic Services	27.9	0.1	2 8	34 4	40 6	33.3	41.1	0 1	3.6	59 3	69.3	64 5	23 6	0.1	2 3	2 4	3.4	2 8
Any Emergency Services	0.7	0 0	0 1	0.7	0 8	1.3	0 8	0 0	0.1	1.1	1.1	1.7	0.7	0.0	0.1	0.5	0.7	1.2
Any Orthodontic Services	0.0	0.0	0.0	0.0	0 0	0.0	0 0	0 0	0.0	0.0	0.0	0 0	0 0	0.0	0.0	0.0	0.0	0.0

Service Category	Dental Services in 1992						Preventive Medical Care Visit in 1992						No Preventive Medical Care Visit in 1992					
	All Children	< 12 mos.	1-2 yrs.	3-6 yrs.	7-12 yrs.	13-20 yrs.	All Children	< 12 mos.	1-2 yrs.	3-6 yrs.	7-12 yrs.	13-20 yrs.	All Children	< 12 mos.	1-2 yrs.	3-6 yrs.	7-12 yrs.	13-20 yrs.
Any Dental Care	27.4	0.1	3 3	36 8	41 0	32 6	31.7	0 1	[illegible]	57.4	64.7	58 2	25.7	0 1	2 8	27.8	36.7	29 3
Any Diagnostic Services	26 3	0.1	3 2	35 6	39 6	30.9	30 9	0.1	[illegible]	56 1	63.3	56.3	24 6	0.1	2.7	26 7	35 2	27.7
Any Preventive Services	23.9	0.0	1.9	33 0	37.8	26.3	28 8	0.0	[illegible]	52 6	61.5	51.8	22 0	0.0	1 6	24 5	33 4	23 0
Any Therapeutic Services	13.3	0.0	0 8	14.5	20 9	18 8	13 5	0.0	0.9	20.5	32.4	31.7	13.2	0 0	0 8	11 9	18 8	17.2
Any Diagnostic, Preventive, or Therapeutic Services	27.4	0.1	3.2	36.8	41.0	32.5	31.7	0.1	3 8	57.4	64.6	58.2	25.7	0.1	2.8	27.8	36.6	29.2
Any Emergency Services	0.4	0.0	0.1	0.3	0 4	0 6	0 3	0.0	0.1	0.4	0 7	0.8	0 4	0.0	0.1	0.3	0 4	0.6
Any Orthodontic Services	0 0	0.0	0 0	0 0	0 0	0 0	0 0	0.0	0 0	0.0	0 0	0 0	0 0	0 0	0.0	0 0	0 0	0 0

APPENDIX TABLE R-2.1

Medicaid Children's Use of Dental Care by Age and Preventive Medical Care Status:
Percent of Children Receiving Care, 1989 and 1992, Michigan

Service Category	Dental Services in 1989						Preventive Medical Care Visit in 1989						No Preventive Medical Care Visit in 1989					
	All Children	< 12 mos.	1-2 yrs.	3-6 yrs.	7-12 yrs.	13-20 yrs.	All Children	< 12 mos.	1-2 yrs.	3-6 yrs.	7-12 yrs.	13-20 yrs.	All Children	< 12 mos.	1-2 yrs.	3-6 yrs.	7-12 yrs.	13-20 yrs.
Any Dental Care	26.3	0.1	2.5	34.1	38.6	28.6	29.1	0.1	2.8	47.0	52.9	45.5	25.1	0.1	2.1	26.4	35.0	25.8
Any Diagnostic Services	24.7	0.0	1.9	32.4	36.6	26.6	27.6	0.1	2.2	45.1	50.6	43.2	23.5	0.0	1.7	24.8	33.1	23.9
Any Preventive Services	22.4	0.0	0.8	30.2	34.8	22.7	25.5	0.0	0.8	42.2	48.6	38.7	21.1	0.0	0.7	23.1	31.3	20.0
Any Therapeutic Services	11.9	0.0	0.7	11.5	18.5	14.8	11.5	0.0	0.7	14.2	24.4	22.6	12.0	0.0	0.6	9.9	17.7	13.5
Any Diagnostic, Preventive, or Therapeutic Services	26.0	0.1	2.1	33.8	38.4	28.3	28.8	0.1	2.3	46.7	52.8	45.2	24.9	0.0	1.8	26.2	34.8	25.5
Any Emergency Services	2.2	0.0	0.8	2.2	2.5	3.0	2.0	0.1	0.9	2.5	3.0	4.0	2.2	0.0	0.6	2.0	2.4	2.9
Any Orthodontic Services	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Dental Services in 1992						Preventive Medical Care Visit in 1992						No Preventive Medical Care Visit in 1992					
Service Category	All Children	< 12 mos.	1-2 yrs.	3-6 yrs.	7-12 yrs.	13-20 yrs.	All Children	< 12 mos.	1-2 yrs.	3-6 yrs.	7-12 yrs.	13-20 yrs.	All Children	< 12 mos.	1-2 yrs.	3-6 yrs.	7-12 yrs.	13-20 yrs.
Any Dental Care	26.4	0.1	2.5	35.7	39.7	28.9	27.1	0.1	2.7	48.5	55.6	47.1	26.0	0.1	2.3	26.2	36.4	26.2
Any Diagnostic Services	25.0	0.0	1.9	34.1	37.7	27.2	25.9	0.0	2.0	46.9	53.3	45.1	24.5	0.0	1.8	24.7	34.4	24.5
Any Preventive Services	22.8	0.0	0.8	31.5	36.1	23.7	23.9	0.0	0.8	43.5	51.6	41.1	22.2	0.0	0.8	22.7	32.8	21.1
Any Therapeutic Services	11.4	0.0	0.7	11.7	18.6	14.6	10.1	0.0	0.7	14.6	24.7	22.9	12.1	0.0	0.6	9.5	17.4	13.3
Any Diagnostic, Preventive, or Therapeutic Services	26.1	0.1	2.0	35.3	39.4	28.7	26.7	0.1	2.1	48.1	55.3	46.8	25.7	0.1	1.9	25.8	36.1	26.0
Any Emergency Services	2.3	0.0	0.8	2.5	2.7	3.1	2.0	0.0	0.9	3.0	3.4	4.1	2.4	0.0	0.7	2.1	2.6	3.0
Any Orthodontic Services	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

APPENDIX TABLE R-2.1

Medicaid Children's Use of Dental Care by Age and Preventive Medical Care Status:
Percent of Children Receiving Care, 1989 and 1992, Tennessee

Service Category	Dental Services in 1989						Preventive Medical Care Visit in 1989						No Preventive Medical Care Visit in 1989					
	All Children	< 12 mos.	1-2 yrs.	3-6 yrs.	7-12 yrs.	13-20 yrs.	All Children	< 12 mos.	1-2 yrs.	3-6 yrs.	7-12 yrs.	13-20 yrs.	All Children	< 12 mos.	1-2 yrs.	3-6 yrs.	7-12 yrs.	13-20 yrs.
Any Dental Care	26.7	0 2	4 2	32 2	43 4	29 5	26 2	0 2	4.1	46 6	65 0	54 7	26 9	0.2	4 2	25 8	40 8	27 4
Any Diagnostic Services	25.1	0 2	3 9	30.7	41.3	26.9	25.1	0 2	3 9	44 9	62.5	51.8	25 1	0 2	3 9	24 5	38 7	24 8
Any Preventive Services	22.9	0.1	2 5	27 9	39 2	24 0	22 8	0 1	2 5	40.5	60.1	48 1	22 9	0.1	2.6	22 3	36 7	22 0
Any Therapeutic Services	12.8	0.1	0.9	12.7	20.9	16.5	11.3	0 1	0 9	17.5	32.7	28 6	13 3	0 1	0 9	10.7	19 5	15 5
Any Diagnostic, Preventive, or Therapeutic Services	26.4	0.2	4.1	32.1	43.0	28 9	26.0	0 2	4 0	46.5	64 6	54.0	26.5	0.2	4.1	25.7	40.4	26.8
Any Emergency Services	1.0	0 0	0 3	1.1	1.2	1.6	0 8	0.0	0 4	1.3	1.6	2.1	1.1	0.0	0.3	1.0	1.1	1 5
Any Orthodontic Services	0.7	0.0	0.0	0 0	0.7	1.7	0 4	0 0	0 0	0.0	1.1	2 6	0 8	0.0	0 0	0 0	0 6	1.7

Service Category	Dental Services in 1992						Preventive Medical Care Visit in 1992						No Preventive Medical Care Visit in 1992					
	All Children	< 12 mos.	1-2 yrs.	3-6 yrs.	7-12 yrs.	13-20 yrs.	All Children	< 12 mos.	1-2 yrs.	3-6 yrs.	7-12 yrs.	13-20 yrs.	All Children	< 12 mos.	1-2 yrs.	3-6 yrs.	7-12 yrs.	13-20 yrs.
Any Dental Care	29.5	0.2	6 7	36 8	46.3	31.8	26.9	0 3	6.4	49.3	64.2	53.7	30.5	0.2	7.2	30.2	44 2	30.0
Any Diagnostic Services	27 8	0 2	6 4	35 2	44 1	29 0	25 7	0 2	6.4	47.3	64.2	50 2	28 6	0 2	6.9	28 7	42 0	27.2
Any Preventive Services	25.5	0.1	5 0	32 5	42.1	25 6	23 4	0.4	4.5	43.4	59.4	46.4	26.2	0.1	5.7	26 7	40.0	23 8
Any Therapeutic Services	13 3	0.0	1 2	13 8	22 5	16 6	10 7	0.0	[illegible]	18.1	31.7	26.8	14 3	0.0	1.2	11 5	21 3	15.7
Any Diagnostic, Preventive, or Therapeutic Services	29 1	0.2	6 8	36 7	45 9	30 9	26.7	0.3	6.2	49 2	63.8	52.7	30.1	0.2	7.1	30.1	43.7	29.1
Any Emergency Services	1.2	0.0	0.3	1.3	1.4	1.8	0 9	0.0	0.3	1.6	1.6	2.4	1.3	0.0	0 3	1.1	1.4	1.8
Any Orthodontic Services	0.9	0.0	0 0	0 0	0.9	2 4	0 4	0 0	0.0	0.0	1.5	3 8	1.0	0 0	0 0	0 0	0.8	2.3

APPENDIX TABLE R-2.2

Medicaid Children's Use of Dental Care by Eligibility Group and Preventive Medical Care Status:
Percent of Children Receiving Care, 1989 and 1992
California

Service Category	Dental Services in 1989						Preventive Medical Care Visit in 1989						No Preventive Medical Care Visit in 1989					
	All Children	AFDC	Poverty Related	Blind/ Disabled	Foster Care	Medically Needy/ Other	All Children	AFDC	Poverty Related	Blind/ Disabled	Foster Care	Medically Needy/ Other	All Children	AFDC	Poverty Related	Blind/ Disabled	Foster Care	Medically Needy/ Other
Any Dental Care	20.0	22.4	0.4	26.0	28.1	14.0	19.9	19.8	0.3	33.9	34.5	16.5	20.1	23.6	0.5	24.5	24.6	13.5
Any Diagnostic Services	18.5	20.9	0.4	21.7	25.9	12.9	18.6	18.5	0.3	27.7	32.5	15.4	18.5	21.9	0.5	20.5	22.3	12.3
Any Preventive Services	4.0	3.9	0.2	8.5	5.0	4.0	3.3	2.8	0.2	7.5	5.6	4.0	4.3	4.4	0.3	8.7	4.6	4.0
Any Therapeutic Services	11.8	13.3	0.2	13.0	13.3	8.8	11.1	11.1	0.1	15.6	15.4	10.4	12.0	14.2	0.3	12.5	12.1	8.4
Any Diagnostic, Preventive or Therapetuic Services	19.7	22.1	0.4	24.7	27.4	13.9	19.5	19.5	0.3	31.8	33.8	16.3	19.8	23.3	0.5	23.4	23.9	13.3
Any Emergency Services	0.7	0.7	0.0	1.6	0.9	0.5	0.6	0.6	0.0	1.6	1.0	0.5	0.7	0.8	0.0	1.6	0.8	0.5
Any Orthodontic Services	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0

Service Category	Dental Services in 1992						Preventive Medical Care Visit in 1992						No Preventive Medical Care Visit in 1992					
	All Children	AFDC	Poverty Related	Blind/ Disabled	Foster Care	Medically Needy/ Other	All Children	AFDC	Poverty Related	Blind/ Disabled	Foster Care	Medically Needy/ Other	All Children	AFDC	Poverty Related	Blind/ Disabled	Foster Care	Medically Needy/ Other
Any Dental Care	20.6	25.6	6.0	27.1	37.2	13.8	20.1	21.9	5.8	32.8	45.5	14.7	20.8	27.5	6.1	25.9	31.9	13.6
Any Diagnostic Services	18.4	23.0	5.3	22.8	34.0	12.2	18.3	19.9	5.2	27.8	42.6	13.3	18.5	24.5	5.3	21.7	28.5	11.9
Any Preventive Services	4.3	4.6	0.6	7.7	6.8	3.8	3.6	3.5	0.5	6.6	8.4	3.5	4.5	5.2	0.6	7.9	5.7	3.9
Any Therapeutic Services	13.1	16.4	3.7	15.6	19.0	9.2	12.1	13.4	3.3	18.0	22.7	9.4	13.5	17.8	3.9	15.1	16.6	9.1
Any Diagnostic, Preventive or Therapetuic Services	19.6	24.4	5.6	25.4	35.7	13.1	19.3	21.0	5.5	30.8	44.0	14.0	19.8	26.1	5.7	24.3	30.3	12.8
Any Emergency Services	0.7	0.8	0.1	1.9	0.9	0.6	0.6	0.6	0.1	2.3	1.1	0.5	0.8	0.9	0.1	1.8	0.8	0.6
Any Orthodontic Services	0.5	0.6	0.0	0.8	1.0	0.3	0.3	0.3	0.0	0.6	1.0	0.3	0.6	0.7	0.0	0.8	0.9	0.3

APPENDIX TABLE R-2.2

Medicaid Children's Use of Dental Care by Eligibility Group and Preventive Medical Care Status:
Percent of Children Receiving Care, 1989 and 1992
Georgia

Service Category	Dental Services in 1989						Preventive Medical Care Visit in 1989						No Preventive Medical Care Visit in 1989					
	All Children	AFDC	Poverty Related	Blind/ Disabled	Foster Care	Medically Needy/ Other	All Children	AFDC	Poverty Related	Blind/ Disabled	Foster Care	Medically Needy/ Other	All Children	AFDC	Poverty Related	Blind/ Disabled	Foster Care	Medically Needy/ Other
Any Dental Care	27.9	30.6	8.5	34.9	48.6	19.9	41.1	43.4	12.1	59.8	63.5	36.4	23.6	26.2	7.5	29.4	41.7	16.1
Any Diagnostic Services	26.7	29.3	8.2	33.2	47.0	18.7	40.0	42.3	11.7	58.4	62.3	35.2	22.3	24.7	7.2	27.5	40.0	14.9
Any Preventive Services	24.2	26.7	5.7	28.2	45.0	17.1	37.5	39.9	9.4	51.5	59.7	33.1	19.8	22.2	4.7	23.0	38.3	13.4
Any Therapeutic Services	13.8	15.2	4.6	16.8	20.4	10.3	18.7	19.7	5.6	26.2	26.3	17.8	12.3	13.6	4.2	14.7	17.6	8.6
Any Diagnostic, Preventive or Therapeutic Services	27.9	30.6	8.5	34.8	48.6	19.9	41.1	43.4	12.1	59.8	63.5	36.4	23.6	26.1	7.5	29.3	41.7	16.1
Any Emergency Services	0.7	0.8	0.4	1.3	0.9	0.5	0.8	0.8	0.4	1.6	1.0	0.7	0.7	0.8	0.4	1.3	0.8	0.4
Any Orthodontic Services	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Service Category	Dental Services in 1992						Preventive Medical Care Visit in 1992						No Preventive Medical Care Visit in 1992					
	All Children	AFDC	Poverty Related	Blind/ Disabled	Foster Care	Medically Needy/ Other	All Children	AFDC	Poverty Related	Blind/ Disabled	Foster Care	Medically Needy/ Other	All Children	AFDC	Poverty Related	Blind/ Disabled	Foster Care	Medically Needy/ Other
Any Dental Care	20.6	25.6	6.0	27.1	37.2	13.8	20.1	21.9	5.8	32.8	45.5	14.7	20.8	27.5	6.1	25.9	31.9	13.6
Any Diagnostic Services	18.4	23.0	5.3	22.8	34.0	12.2	18.3	19.9	5.2	27.8	42.6	13.3	18.5	24.5	5.3	21.7	28.5	11.9
Any Preventive Services	4.3	4.6	0.6	7.7	6.8	3.8	3.6	3.5	0.5	6.6	8.4	3.5	4.5	5.2	0.6	7.9	5.7	3.9
Any Therapeutic Services	13.1	16.4	3.7	15.6	19.0	9.2	12.1	13.4	3.3	18.0	22.7	9.4	13.5	17.8	3.9	15.1	16.6	9.1
Any Diagnostic, Preventive or Therapetuic Services	19.6	24.4	5.6	25.4	35.7	13.1	19.3	21.0	5.5	30.8	44.0	14.0	19.8	26.1	5.7	24.3	30.3	12.8
Any Emergency Services	0.7	0.8	0.1	1.9	0.9	0.6	0.6	0.6	0.1	2.3	1.1	0.5	0.8	0.9	0.1	1.8	0.8	0.6
Any Orthodontic Services	0.5	0.6	0.0	0.8	1.0	0.3	0.3	0.3	0.0	0.6	1.0	0.3	0.6	0.7	0.0	0.8	0.9	0.0

APPENDIX TABLE R-2.2

Medicaid Children's Use of Dental Care by Eligibility Group and Preventive Medical Care Status:
Percent of Children Receiving Care, 1989 and 1992
Michigan

Service Category	Dental Services in 1989						Preventive Medical Care Visit in 1989						No Preventive Medical Care Visit in 1989					
	All Children	AFDC	Poverty Related	Blind/ Disabled	Foster Care	Medically Needy/ Other	All Children	AFDC	Poverty Related	Blind/ Disabled	Foster Care	Medically Needy/ Other	All Children	AFDC	Poverty Related	Blind/ Disabled	Foster Care	Medically Needy/ Other
Any Dental Care	26.3	27.7	4.7	27.5	N.A.	24.7	29.1	29.4	2.3	39.1	N.A.	33.8	25.1	26.9	5.3	25.2	N.A.	22.0
Any Diagnostic Services	24.7	26.1	3.7	25.4	N.A.	23.1	27.6	27.9	2.0	36.8	N.A.	32.2	23.5	25.3	4.7	23.1	N.A.	20.3
Any Preventive Services	22.4	23.8	2.6	21.3	N.A.	20.8	25.5	25.8	1.6	32.9	N.A.	29.9	21.1	22.9	3.2	19.0	N.A.	18.0
Any Therapeutic Services	11.9	12.4	2.0	11.1	N.A.	11.7	11.5	11.5	0.9	14.1	N.A.	14.3	12.0	12.8	2.7	10.5	N.A.	10.9
Any Diagnostic, Preventive or Therapetuic Services	26.0	27.4	4.0	27.0	N.A.	24.5	28.8	29.1	2.1	38.6	N.A.	33.6	24.9	26.7	5.1	24.8	N.A.	21.8
Any Emergency Services	2.2	2.2	0.7	3.1	N.A.	2.1	2.0	2.0	0.4	3.8	N.A.	2.4	2.2	2.3	0.9	3.0	N.A.	2.1
Any Orthodontic Services	0.0	0.0	0.0	0.1	N.A.	0.0	0.0	0.0	0.0	0.0	N.A.	0.0	0.0	0.0	0.0	0.1	N.A.	0.0

Service Category	Dental Services in 1992						Preventive Medical Care Visit in 1992						No Preventive Medical Care Visit in 1992					
	All Children	AFDC	Poverty Related	Blind/ Disabled	Foster Care	Medically Needy/ Other	All Children	AFDC	Poverty Related	Blind/ Disabled	Foster Care	Medically Needy/ Other	All Children	AFDC	Poverty Related	Blind/ Disabled	Foster Care	Medically Needy/ Other
Any Dental Care	26.4	28.4	12.2	26.9	N.A.	28.8	27.1	28.4	11.7	28.6	N.A.	38.8	26.0	28.4	12.7	24.1	N.A.	25.7
Any Diagnostic Services	25.0	27.0	11.4	25.0	N.A.	27.2	25.9	27.2	11.0	36.4	N.A.	37.3	24.5	26.9	11.7	22.4	N.A.	24.0
Any Preventive Services	22.8	24.7	10.0	21.9	N.A.	25.0	23.9	25.1	9.8	32.9	N.A.	34.9	22.2	24.5	10.2	19.4	N.A.	21.9
Any Therapeutic Services	11.4	12.3	5.1	10.8	N.A.	12.9	10.1	10.6	4.2	13.7	N.A.	15.0	12.1	13.2	5.9	10.1	N.A.	12.2
Any Diagnostic, Preventive or Therapetuic Services	26.1	28.1	12.0	26.3	N.A.	28.6	26.7	28.0	11.4	37.9	N.A.	38.5	25.7	28.1	12.5	23.6	N.A.	25.5
Any Emergency Services	2.3	2.4	1.2	2.8	N.A.	2.3	2.0	2.1	1.0	3.7	N.A.	2.5	2.4	2.6	1.4	2.6	N.A.	2.3
Any Orthodontic Services	0.0	0.0	0.0	0.1	N.A.	0.0	0.0	0.0	0.0	0.1	N.A.	0.0	0.0	0.0	0.0	0.1	N.A.	0.0

APPENDIX TABLE R-2.2

Medicaid Children's Use of Dental Care by Eligibility Group and Preventive Medical Care Status:
Percent of Children Receiving Care, 1989 and 1992
Tennessee

Service Category	Dental Services in 1989						Preventive Medical Care Visit in 1989						No Preventive Medical Care Visit in 1989					
	All Children	AFDC	Poverty Related	Blind/ Disabled	Foster Care	Medically Needy/ Other	All Children	AFDC	Poverty Related	Blind/ Disabled	Foster Care	Medically Needy/ Other	All Children	AFDC	Poverty Related	Blind/ Disabled	Foster Care	Medically Needy/ Other
Any Dental Care	26.7	32.4	10.0	30.6	39.0	25.2	26.2	30.8	10.2	48.6	46.1	35.8	26.9	32.9	9.8	27.6	36.1	23.4
Any Diagnostic Services	25.1	30.7	9.2	28.4	36.6	23.1	25.1	29.7	9.6	46.1	45.0	33.9	25.1	31.0	8.9	25.4	33.1	21.3
Any Preventive Services	22.9	28.5	7.6	25.4	34.0	20.8	22.8	27.4	8.0	41.4	41.5	30.9	22.9	28.8	7.3	22.8	30.9	19.1
Any Therapeutic Services	12.8	14.7	5.1	13.8	18.0	14.0	11.3	12.5	4.5	18.5	20.2	18.3	13.3	15.4	5.4	13.0	17.0	13.2
Any Diagnostic, Preventive or Therapetuic Services	26.4	32.1	9.9	30.2	38.4	24.8	26.0	30.6	10.1	48.1	45.7	35.4	26.5	32.5	9.7	27.2	35.3	23.0
Any Emergency Services	1.0	1.1	0.7	1.6	1.0	1.1	0.8	0.9	0.5	2.0	1.0	1.1	1.1	1.2	0.8	1.5	1.1	1.0
Any Orthodontic Services	0.7	0.8	0.0	0.9	1.9	0.9	0.4	0.4	0.0	1.0	1.4	0.8	0.8	0.9	0.0	0.9	2.2	0.9

Service Category	Dental Services in 1992						Preventive Medical Care Visit in 1992						No Preventive Medical Care Visit in 1992					
	All Children	AFDC	Poverty Related	Blind/ Disabled	Foster Care	Medically Needy/ Other	All Children	AFDC	Poverty Related	Blind/ Disabled	Foster Care	Medically Needy/ Other	All Children	AFDC	Poverty Related	Blind/ Disabled	Foster Care	Medically Needy/ Other
Any Dental Care	29.5	35.7	19.0	34.8	41.5	29.5	26.9	31.7	17.7	49.4	49.0	38.1	30.5	37.2	19.9	32.1	38.3	28.1
Any Diagnostic Services	27.8	34.0	17.9	32.6	38.6	27.0	25.7	30.4	16.9	46.6	46.8	36.0	28.6	35.2	18.5	30.0	35.2	25.6
Any Preventive Services	25.5	31.7	15.9	29.3	35.9	24.3	23.4	28.2	14.9	42.7	44.3	33.3	26.2	32.9	16.5	26.9	32.4	22.9
Any Therapeutic Services	13.3	15.1	8.9	14.8	19.0	15.2	10.7	11.9	7.3	19.3	21.8	17.4	14.3	16.3	10.0	14.0	18.0	14.9
Any Diagnostic, Preventive or Therapetuic Services	29.1	35.3	18.9	34.2	40.6	28.8	26.7	31.4	17.7	48.9	48.5	37.6	30.1	36.7	19.7	31.5	37.2	27.4
Any Emergency Services	1.2	1.3	0.9	1.4	1.6	1.4	0.9	1.0	0.7	1.5	1.7	1.4	1.3	1.4	1.0	1.4	1.5	1.4
Any Orthodontic Services	0.9	1.1	0.0	1.3	2.4	1.5	0.4	0.5	0.0	1.5	2.3	1.3	1.0	1.3	0.1	1.2	2.5	1.5

APPENDIX TABLE R-2.3

Medicaid Children's Use of Dental Care by Gender and Preventive Medical Care Status:
Percent of Children Receiving Care, 1989 and 1992
California

Service Category	Dental Services in 1989			Preventive Medical Care Visit in 1989			No Preventive Medical Care Visit in 1989		
	All Children	Male	Female	All Children	Male	Female	All Children	Male	Female
Any Dental Care	20.0	19.6	20.4	19.9	19.5	20.3	20.1	19.7	20.4
Any Diagnostic Services	18.5	18.2	18.8	18.6	18.2	18.9	18.5	18.1	18.8
Any Preventive Services	4.0	3.6	4.4	3.3	2.8	3.7	4.3	3.9	4.7
Any Therapeutic Services	11.8	11.5	12.1	11.2	10.8	11.5	12.0	11.7	12.3
Any Diagnostic, Preventive or Therapetuic Services	19.7	19.3	20.1	19.5	19.1	19.9	19.8	19.4	20.1
Any Emergency Services	0.7	0.7	0.7	0.6	0.6	0.6	0.7	0.6	0.7
Any Orthodontic Services	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Service Category	Dental Services in 1992			Preventive Medical Care Visit in 1992			No Preventive Medical Care Visit in 1992		
	All Children	Male	Female	All Children	Male	Female	All Children	Male	Female
Any Dental Care	20.6	20.2	21.0	20.1	19.7	20.5	20.8	20.5	21.2
Any Diagnostic Services	18.4	18.1	18.8	18.3	17.9	18.7	18.5	18.1	18.8
Any Preventive Services	4.3	3.9	4.6	3.6	3.2	4.0	4.5	4.2	4.9
Any Therapeutic Services	13.1	12.8	13.4	12.1	11.8	12.4	13.5	13.2	13.8
Any Diagnostic, Preventive or Therapetuic Services	19.6	19.3	20.0	19.3	18.9	19.7	19.8	19.4	20.1
Any Emergency Services	0.7	0.6	0.8	0.6	0.5	0.7	0.8	0.7	0.8
Any Orthodontic Services	0.5	0.4	0.6	0.3	0.3	0.4	0.6	0.5	0.6

APPENDIX TABLE R-2.3

Medicaid Children's Use of Dental Care by Gender and Preventive Medical Care Status: Percent of Children Receiving Care, 1989 and 1992
Georgia

Service Category	Dental Services in 1989			Preventive Medical Care Visit in 1989			No Preventive Medical Care Visit in 1989		
	All Children	Male	Female	All Children	Male	Female	All Children	Male	Female
Any Dental Care	27.9	27.2	28.5	41.1	40.0	42.2	23.6	23.0	24.2
Any Diagnostic Services	26.7	26.1	27.2	40.0	38.9	41.0	22.3	21.7	22.8
Any Preventive Services	24.2	24.1	24.2	37.5	36.8	38.2	19.8	19.9	19.7
Any Therapeutic Services	13.8	13.0	14.5	18.7	17.7	19.5	12.3	11.5	12.9
Any Diagnostic, Preventive or Therapetuic Services	27.9	27.2	28.5	41.1	39.9	42.2	23.6	22.9	24.2
Any Emergency Services	0.7	0.6	0.8	0.8	0.7	0.9	0.7	0.6	0.8
Any Orthodontic Services	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Service Category	Dental Services in 1992			Preventive Medical Care Visit in 1992			No Preventive Medical Care Visit in 1992		
	All Children	Male	Female	All Children	Male	Female	All Children	Male	Female
Any Dental Care	27.4	26.6	28.0	31.7	30.8	32.5	25.7	25.0	26.4
Any Diagnostic Services	26.3	25.7	26.9	30.9	30.1	31.7	24.6	23.9	25.2
Any Preventive Services	23.9	23.7	24.1	28.8	28.1	29.4	22.0	21.9	22.1
Any Therapeutic Services	13.3	12.4	14.0	13.5	12.8	14.2	13.2	12.3	13.9
Any Diagnostic, Preventive or Therapetuic Services	27.4	26.6	28.0	31.7	30.8	32.5	25.7	24.9	26.4
Any Emergency Services	3.5	3.1	3.9	3.2	3.0	3.4	3.7	3.2	4.1
Any Orthodontic Services	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

APPENDIX TABLE R-2.3

Medicaid Children's Use of Dental Care by Gender and Preventive Medical Care Status: Percent of Children Receiving Care, 1989 and 1992
Michigan

Service Category	Dental Services in 1989			Preventive Medical Care Visit in 1989			No Preventive Medical Care Visit in 1989		
	All Children	Male	Female	All Children	Male	Female	All Children	Male	Female
Any Dental Care	26.3	25.5	27.0	29.1	28.7	29.4	25.1	24.1	26.1
Any Diagnostic Services	24.7	24.0	25.4	27.6	27.3	28.0	23.5	22.5	24.4
Any Preventive Services	22.4	22.0	22.8	22.5	25.4	25.7	21.1	20.6	21.6
Any Therapeutic Services	11.9	11.3	12.4	11.5	11.2	11.9	12.0	11.3	12.6
Any Diagnostic, Preventive or Therapetuic Services	26.0	25.2	26.8	28.8	28.4	29.1	24.9	23.9	25.8
Any Emergency Services	2.2	1.9	2.4	2.0	1.9	2.1	2.2	1.9	2.5
Any Orthodontic Services	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Service Category	**Dental Services in 1992**			**Preventive Medical Care Visit in 1992**			**No Preventive Medical Care Visit in 1992**		
	All Children	Male	Female	All Children	Male	Female	All Children	Male	Female
Any Dental Care	26.3	25.7	27.0	27.1	26.7	27.5	26.0	25.1	26.8
Any Diagnostic Services	20.5	24.3	25.5	25.9	25.5	26.3	24.5	23.7	25.2
Any Preventive Services	22.8	22.4	23.2	23.9	23.6	24.2	22.2	21.7	22.7
Any Therapeutic Services	11.4	11.0	11.9	10.1	9.9	10.4	12.1	11.6	12.6
Any Diagnostic, Preventive or Therapetuic Services	26.1	25.4	26.7	26.7	26.4	27.1	25.7	24.9	26.5
Any Emergency Services	2.3	2.0	2.5	2.0	1.9	2.1	2.4	2.1	2.6
Any Orthodontic Services	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

APPENDIX TABLE R-2.3

Medicaid Children's Use of Dental Care by Gender and Preventive Medical Care Status:
Percent of Children Receiving Care, 1989 and 1992
Tennessee

Service Category	Dental Services in 1989			Preventive Medical Care Visit in 1989			No Preventive Medical Care Visit in 1989		
	All Children	Male	Female	All Children	Male	Female	All Children	Male	Female
Any Dental Care	26.7	25.9	27.5	26.2	25.6	26.8	26.9	25.9	27.7
Any Diagnostic Services	25.1	24.3	25.7	25.1	24.6	25.6	25.1	24.2	25.8
Any Prevenlive Services	22.9	22.3	23.4	22.8	22.3	23.3	22.9	22.3	23.4
Any Therapeutic Services	12.8	12.1	13.5	11.3	10.8	11.7	13.3	12.5	14.0
Any Diagnostic, Preventive or Therapetuic Services	26.4	25.6	27.1	26.0	25.4	26.5	26.5	25.6	27.3
Any Emergency Services	1.0	0.9	1.2	0.8	0.8	0.9	1.1	0.9	1.2
Any Orthodontic Services	0.7	0.5	0.8	0.4	0.3	0.5	0.8	0.6	0.9
Service Category	**Dental Services in 1992**			**Preventive Medical Care Visit in 1992**			**No Preventive Medical Care Visit in 1992**		
	All Children	Male	Female	All Children	Male	Female	All Children	Male	Female
Any Dental Care	29.5	28.8	30.2	26.9	26.3	27.4	30.5	29.8	31.2
Any Diagnostic Services	27.8	27.1	28.4	25.7	25.2	26.2	28.6	28.0	29.1
Any Preventive Services	25.5	25.1	25.8	23.4	23.0	23.9	26.2	25.9	26.5
Any Therapeutic Services	13.3	12.7	13.8	10.7	10.4	11.0	14.3	13.6	14.9
Any Diagnostic, Preventive or Therapetuic Services	29.1	28.4	29.8	26.7	26.2	27.2	30.1	29.4	30.7
Any Emergency Services	1.2	1.1	1.3	0.9	0.9	0.9	1.3	1.1	1.4
Any Orthodontic Services	0.9	0.9	1.0	0.4	0.3	0.5	1.0	0.8	1.2

APPENDIX TABLE R-2.4

Medicaid Children's Use of Dental Care by Race/Ethnicity and Preventive Medical Care Status: Percent of Children Receiving Care, 1989 and 1992
California

Service Category	Dental Services in 1989			Preventive Medical Care Visit in 1989			No Preventive Medical Care Visit in 1989		
	All Children	White	Nonwhite	All Children	White	Nonwhite	All Children	White	Nonwhite
Any Dental Care	20.0	21.5	19.8	19.9	21.2	19.5	20.1	21.5	20.0
Any Diagnostic Services	18.5	19.6	18.5	18.6	19.6	18.3	18.5	19.6	18.6
Any Preventive Services	4.0	4.2	4.0	3.3	3.5	3.0	4.3	4.4	4.3
Any Therapeutic Services	11.8	11.6	12.2	11.2	10.6	11.5	12.0	11.9	12.5
Any Diagnostic, Preventive or Therapetuic Services	19.7	21.0	19.6	19.5	20.8	19.2	19.8	21.1	19.7
Any Emergency Services	0.7	0.7	0.6	0.6	0.6	0.6	0.7	0.7	0.7
Any Orthodontic Services	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Service Category	Dental Services in 1992			Preventive Medical Care Visit in 1992			No Preventive Medical Care Visit in 1992		
	All Children	White	Nonwhite	All Children	White	Nonwhite	All Children	White	Nonwhite
Any Dental Care	20.6	24.4	19.5	20.1	23.8	18.8	20.8	24.6	19.8
Any Diagnostic Services	18.4	21.3	17.7	18.3	21.4	17.3	18.5	21.3	17.8
Any Preventive Services	4.3	4.9	4.1	3.6	4.1	3.4	4.5	5.1	4.4
Any Therapeutic Services	13.1	14.2	12.9	12.1	13.0	11.9	13.5	14.7	13.4
Any Diagnostic, Preventive or Therapetuic Services	19.6	22.9	18.7	19.3	22.6	18.2	19.8	22.9	18.9
Any Emergency Services	0.7	0.9	0.6	0.6	0.7	0.5	0.8	0.9	0.7
Any Orthodontic Services	0.5	0.6	0.4	0.3	0.4	0.3	0.6	0.7	0.5

APPENDIX TABLE R-2.4

Medicaid Children's Use of Dental Care by Race/Ethnicity and Preventive Medical Care Status:
Percent of Children Receiving Care, 1989 and 1992
Georgia

Service Category	Dental Services in 1989			Preventive Medical Care Visit in 1989			No Preventive Medical Care Visit in 1989		
	All Children	White	Nonwhite	All Children	White	Nonwhite	All Children	White	Nonwhite
Any Dental Care	27.9	27.4	28.1	41.1	45.2	39.8	23.6	22.8	24.0
Any Diagnostic Services	26.7	26.1	26.9	40.0	43.9	38.7	22.3	21.4	22.7
Any Preventive Services	24.2	23.2	24.5	37.5	40.6	36.4	19.8	18.7	20.3
Any Therapeutic Services	13.8	14.0	13.7	18.7	21.5	17.7	12.3	12.1	12.3
Any Diagnostic, Preventive or Therapetuic Services	27.9	27.4	28.1	41.1	45.2	39.8	23.6	22.8	23.9
Any Emergency Services	0.7	0.8	0.7	0.8	1.0	0.7	0.7	0.7	0.7
Any Orthodontic Services	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Service Category	**Dental Services in 1992**			**Preventive Medical Care Visit in 1992**			**No Preventive Medical Care Visit in 1992**		
	All Children	White	Nonwhite	All Children	White	Nonwhite	All Children	White	Nonwhite
Any Dental Care	27.4	27.7	27.2	31.7	32.3	31.4	25.7	26.1	25.5
Any Diagnostic Services	26.3	26.5	26.2	30.9	31.4	30.6	24.6	24.8	24.5
Any Preventive Services	23.9	23.9	23.9	28.8	29.1	28.7	22.0	22.0	22.1
Any Therapeutic Services	13.3	14.2	12.7	13.5	14.5	13.0	13.2	14.1	12.6
Any Diagnostic, Preventive or Therapetuic Services	27.4	27.7	27.2	31.7	32.2	31.4	25.7	26.1	25.5
Any Emergency Services	0.4	0.4	0.3	0.3	0.4	0.3	0.4	0.5	0.3
Any Orthodontic Services	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

APPENDIX TABLE R-2.4

Medicaid Children's Use of Dental Care by Race/Ethnicity and Preventive Medical Care Status:
Percent of Children Receiving Care, 1989 and 1992
Michigan

Service Category	Dental Services In 1989			Preventive Medical Care Visit in 1989			No Preventive Medical Care Visit in 1989		
	All Children	White	Nonwhite	All Children	White	Nonwhite	All Children	White	Nonwhite
Any Dental Care	26.3	27.7	24.3	29.1	29.8	28.0	25.1	26.8	22.7
Any Diagnostic Services	24.7	25.9	23.1	27.6	28.3	26.8	23.5	25.0	21.4
Any Preventive Services	22.4	23.5	20.9	25.5	26.1	24.8	21.1	22.5	19.2
Any Therapeutic Services	11.9	13.5	9.6	11.5	12.9	9.7	12.0	13.7	9.6
Any Diagnostic, Preventive or Therapetuic Services	26.0	27.4	24.1	28.8	29.5	27.8	24.9	26.6	22.5
Any Emergency Services	2.2	2.5	1.7	2.0	2.3	1.7	2.2	2.6	1.7
Any Orthodontic Services	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Service Category	Dental Services in 1992			Preventive Medical Care Visit in 1992			No Preventive Medical Care Visit in 1992		
	All Children	White	Nonwhite	All Children	White	Nonwhite	All Children	White	Nonwhite
Any Dental Care	26.4	27.2	25.1	27.1	26.7	27.8	26.0	27.4	23.7
Any Diagnostic Services	25.0	25.6	24.0	25.9	25.4	26.8	24.5	25.7	22.5
Any Preventive Services	22.8	23.4	22.0	23.9	23.4	24.9	22.2	23.3	20.5
Any Therapeutic Services	11.4	12.7	9.4	10.1	10.8	9.0	12.1	13.6	9.5
Any Diagnostic, Preventive or Therapetuic Services	26.1	26.8	24.9	26.7	26.3	27.6	25.7	27.1	23.5
Any Emergency Services	2.3	2.5	1.8	2.0	2.2	1.7	2.4	2.7	1.8
Any Orthodontic Services	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

APPENDIX TABLE R-2.4

Medicaid Children's Use of Dental Care by Race/Ethnicity and Preventive Medical Care Status:
Percent of Children Receiving Care, 1989 and 1992
Tennessee

Service Category	Dental Services in 1989			Preventive Medical Care Visit in 1989			No Preventive Medical Care Visit in 1989		
	All Children	White	Nonwhite	All Children	White	Nonwhite	All Children	White	Nonwhite
Any Dental Care	26.7	25.4	28.5	26.2	26.5	25.6	26.9	25.0	29.4
Any Diagnostic Services	25.1	23.4	27.4	25.1	25.2	24.9	25.1	22.8	28.1
Any Preventive Services	22.9	20.9	25.6	22.8	22.6	23.2	22.9	20.4	26.3
Any Therapeutic Services	12.8	14.0	11.2	11.3	13.0	8.7	13.3	14.3	12.0
Any Diagnostic, Preventive or Therapetuic Services	26.4	25.0	28.3	26.0	26.3	25.5	26.5	24.6	29.1
Any Emergency Services	1.0	1.1	0.8	0.8	1.0	0.7	1.1	1.2	0.9
Any Orthodontic Services	0.7	0.9	0.4	0.4	0.5	0.2	0.8	1.0	0.5
Service Category	**Dental Services in 1992**			**Preventive Medical Care Visit in 1992**			**No Preventive Medical Care Visit in 1992**		
	All Children	White	Nonwhite	All Children	White	Nonwhite	All Children	White	Nonwhite
Any Dental Care	29.5	27.5	33.0	26.9	26.0	28.6	30.5	28.1	34.5
Any Diagnostic Services	27.8	25.5	31.7	25.7	24.7	27.7	28.6	25.8	33.1
Any Preventive Services	25.5	22.8	30.1	23.4	22.1	26.2	26.2	23.1	31.4
Any Therapeutic Services	13.3	14.1	11.8	10.7	11.6	8.9	14.3	15.2	12.8
Any Diagnostic, Preventive or Therapetuic Services	29.1	27.0	32.7	26.7	25.8	28.4	30.1	27.6	34.2
Any Emergency Services	1.2	1.3	0.9	0.9	1.1	0.6	1.3	1.4	1.1
Any Orthodontic Services	0.9	1.1	0.5	0.4	0.5	0.3	1.0	1.3	0.6

APPENDIX TABLE R-2.5

Medicaid Children's Use of Dental Care by Metro Status and Preventive Medical Care Status
Percent of Children Receiving Care, 1989 and 1992
California

Service Category	Dental Services in 1989				Preventive Medical Care Visit in 1989				No Preventive Medical Care Visit in 1989			
	All Children	Urban	Suburban	Rural	All Children	Urban	Suburban	Rural	All Children	Urban	Suburban	Rural
Any Dental Care	20.0	20.1	20.0	19.6	19.9	20.3	19.9	19.8	20.1	20.1	20.1	19.5
Any Diagnostic Services	18.5	18.7	18.6	17.7	18.6	19.1	18.6	18.0	18.5	18.6	18.6	17.5
Any Preventive Services	4.0	4.3	4.1	3.1	3.3	3.4	3.3	2.6	4.3	4.6	4.4	3.3
Any Therapeutic Services	11.8	11.9	11.9	10.6	11.1	11.3	11.2	9.9	12.0	12.1	12.1	10.8
Any Diagnostic, Preventive or Therapetuic Services	19.7	19.8	19.7	19.2	19.5	20.0	19.6	19.4	19.8	19.8	19.8	19.1
Any Emergency Services	0.7	0.7	0.7	0.6	0.6	0.6	0.6	0.5	0.7	0.7	0.7	0.6
Any Orthodontic Services	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Service Category	Dental Services in 1992				Preventive Medical Care Visit in 1992				No Preventive Medical Care Visit in 1992			
	All Children	Urban	Suburban	Rural	All Children	Urban	Suburban	Rural	All Children	Urban	Suburban	Rural
Any Dental Care	20.6	21.0	20.6	20.9	20.1	20.7	20.1	19.7	20.8	21.1	20.8	21.3
Any Diagnostic Services	18.4	19.3	18.7	14.3	18.3	19.2	18.5	14.1	18.5	19.3	18.7	14.4
Any Preventive Services	4.3	4.8	4.4	2.6	3.6	4.0	3.6	2.3	4.5	5.1	4.7	2.7
Any Therapeutic Services	13.1	13.7	13.3	9.8	12.1	12.6	12.3	8.8	13.5	14.1	13.7	10.1
Any Diagnostic, Preventive or Therapetuic Services	19.6	20.5	19.9	15.7	19.3	20.2	19.5	15.3	19.8	20.6	20.0	15.8
Any Emergency Services	0.7	0.7	0.7	0.5	0.6	0.6	0.6	0.5	0.8	0.8	0.8	0.6
Any Orthodontic Services	0.5	0.6	0.5	0.2	0.3	0.7	0.3	0.2	0.6	0.6	0.6	0.2

APPENDIX TABLE R-2.5

Medicaid Children's Use of Dental Care by Metro Status and Preventive Medical Care Status
Percent of Children Receiving Care, 1989 and 1992
Georgia

Service Category	Dental Services in 1989				Preventive Medical Care Visit in 1989				No Preventive Medical Care Visit in 1989			
	All Children	Urban	Suburban	Rural	All Children	Urban	Suburban	Rural	All Children	Urban	Suburban	Rural
Any Dental Care	27.9	16.2	24.7	32.1	41.1	21.1	35.0	47.1	23.6	14.8	21.9	26.1
Any Diagnostic Services	26.7	15.5	23.7	30.5	40.0	20.4	34.1	45.8	22.3	14.2	20.8	24.4
Any Preventive Services	24.2	13.4	21.4	27.7	37.5	18.4	31.9	43.0	19.8	12.0	18.6	21.6
Any Therapeutic Services	13.8	7.6	11.8	16.5	18.7	8.8	15.2	22.0	12.3	7.3	10.9	14.2
Any Diagnostic, Preventive or Therapetuic Services	27.9	16.1	24.7	32.1	41.1	21.1	35.0	47.1	23.6	14.8	21.9	26.1
Any Emergency Services	0.7	0.6	0.7	0.8	0.8	0.9	0.8	0.8	0.7	0.5	0.6	0.8
Any Orthodontic Services	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Service Category	Dental Services in 1992				Preventive Medical Care Visit in 1992				No Preventive Medical Care Visit in 1992			
	All Children	Urban	Suburban	Rural	All Children	Urban	Suburban	Rural	All Children	Urban	Suburban	Rural
Any Dental Care	27.4	19.2	24.9	30.9	31.7	22.1	27.3	37.0	25.7	18.1	24.0	28.3
Any Diagnostic Services	26.3	18.4	24.0	29.7	30.9	21.4	26.6	36.1	24.6	17.3	23.1	26.9
Any Preventive Services	23.9	16.6	21.9	26.8	28.8	19.8	24.8	33.6	22.0	15.4	20.8	23.9
Any Therapeutic Services	13.3	9.0	11.7	15.5	13.5	9.1	11.2	16.2	13.2	8.9	11.8	15.2
Any Diagnostic, Preventive or Therapetuic Services	27.4	19.2	24.8	30.9	31.7	22.1	27.2	37.0	25.7	18.1	24.0	28.3
Any Emergency Services	0.4	0.3	0.3	0.4	0.3	0.3	0.3	0.3	0.4	0.3	0.3	0.4
Any Orthodontic Services	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

APPENDIX TABLE R-2.5

Medicaid Children's Use of Dental Care by Metro Status and Preventive Medical Care Status
Percent of Children Receiving Care, 1989 and 1992
Michigan

Service Category	Dental Services in 1989				Preventive Medical Care Visit in 1989				No Preventive Medical Care Visit in 1989			
	All Children	Urban	Suburban	Rural	All Children	Urban	Suburban	Rural	All Children	Urban	Suburban	Rural
Any Dental Care	26.3	24.7	25.8	27.9	29.1	27.5	28.4	31.4	25.1	23.8	24.7	26.5
Any Diagnostic Services	24.7	23.6	24.4	25.9	27.6	26.4	27.1	29.6	23.5	22.6	23.2	24.5
Any Preventive Services	22.4	21.5	22.2	23.3	25.5	24.6	25.2	26.9	21.1	20.4	20.9	21.9
Any Therapeutic Services	11.9	9.8	11.3	13.8	11.5	8.7	10.9	14.0	12.0	10.2	11.5	13.8
Any Diagnostic, Preventive or Therapetuic Services	26.0	24.5	25.6	27.6	28.8	27.2	28.2	31.0	24.9	23.6	24.5	26.3
Any Emergency Services	2.2	1.7	2.1	2.3	2.0	1.6	1.9	2.3	2.2	1.8	2.2	2.4
Any Orthodontic Services	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Service Category	Dental Services in 1992				Preventive Medical Care Visit in 1992				No Preventive Medical Care Visit in 1992			
	All Children	Urban	Suburban	Rural	All Children	Urban	Suburban	Rural	All Children	Urban	Suburban	Rural
Any Dental Care	26.4	26.2	26.2	26.9	27.1	27.5	27.1	27.1	26.0	25.6	25.7	26.8
Any Diagnostic Services	25.0	25.1	24.9	25.2	25.9	26.5	26.0	25.8	24.5	24.4	24.3	25.0
Any Preventive Services	22.8	23.1	22.8	22.7	23.9	24.7	24.2	23.2	22.2	22.3	22.1	22.4
Any Therapeutic Services	11.4	10.4	10.9	12.9	10.1	9.3	9.8	11.1	12.1	10.9	11.5	13.7
Any Diagnostic, Preventive or Therapetuic Services	26.1	25.9	25.9	26.6	26.7	27.1	26.8	26.7	25.7	25.3	25.4	26.5
Any Emergency Services	2.3	2.1	2.2	2.4	2.0	1.9	2.0	2.2	2.4	2.2	2.3	2.5
Any Orthodontic Services	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

APPENDIX TABLE R-2.5

Medicaid Children's Use of Dental Care by Metro Status and Preventive Medical Care Status
Percent of Children Receiving Care, 1989 and 1992
Tennessee

Service Category	Dental Services in 1989				Preventive Medical Care Visit in 1989				No Preventive Medical Care Visit in 1989			
	All Children	Urban	Suburban	Rural	All Children	Urban	Suburban	Rural	All Children	Urban	Suburban	Rural
Any Dental Care	26.7	--	26.8	26.5	26.2	--	25.1	28.0	26.9	--	27.4	25.9
Any Diagnostic Services	25.1	--	25.4	24.5	25.1	--	24.1	26.6	25.1	--	25.8	23.6
Any Preventive Services	22.9	--	23.4	22.0	22.8	--	22.1	23.9	22.9	--	23.7	21.3
Any Therapeutic Services	12.8	--	11.9	14.5	11.3	--	9.9	13.5	13.3	--	12.5	14.9
Any Diagnostic, Preventive or Therapeutic Services	26.4	--	26.5	26.1	26.0	--	24.8	27.9	26.5	--	27.0	25.5
Any Emergency Services	1.0	--	1.1	0.9	0.8	--	0.9	0.7	1.1	--	1.2	1.0
Any Orthodontic Services	0.7	--	0.7	0.7	0.4	--	0.4	0.3	0.8	--	0.8	0.8
Service Category	**Dental Services in 1992**				**Preventive Medical Care Visit in 1992**				**No Preventive Medical Care Visit in 1992**			
	All Children	Urban	Suburban	Rural	All Children	Urban	Suburban	Rural	All Children	Urban	Suburban	Rural
Any Dental Care	29.5	34.7	30.0	28.6	26.9	29.2	27.0	26.7	30.5	36.2	31.1	29.4
Any Diagnostic Services	27.8	33.5	28.4	26.6	25.7	28.4	25.9	25.3	28.6	34.9	29.4	27.1
Any Preventive Services	25.5	32.2	26.4	23.8	23.4	27.3	24.0	22.5	26.2	33.5	27.2	24.3
Any Therapeutic Services	13.3	10.5	12.6	14.6	10.7	6.6	10.1	11.8	14.3	11.6	13.5	15.9
Any Diagnostic, Preventive or Therapeutic Services	29.1	34.4	29.7	28.2	26.7	29.1	26.8	26.5	30.1	35.9	30.7	28.9
Any Emergency Services	1.2	1.0	1.1	1.3	0.9	0.6	0.9	1.0	1.3	1.1	1.2	1.4
Any Orthodontic Services	0.9	0.4	0.9	0.9	0.4	0.2	0.4	0.4	1.0	0.4	1.0	1.1

APPENDIX TABLE R-4

Medicaid Children's Dental Service Utilization, by County Type, 1989 and 1992

California

County Type	Percent Children Receiving Dental Visit, 1989	Percent Children Receiving Dental Visit, 1992	% Change	Percent Children Receiving Preventive Dental Visit, 1989	Percent Children Receiving Preventive Dental Visit, 1992	% Change
Total Child Populatiom/Total Dentists						
High Density	16.05	14.60	-0.09	3.30	3.26	-0.01
Medium Density	3.85	5.65	0.47	0.71	0.95	0.33
Low Density	0.11	0.39	2.36	0.01	0.06	4.28

APPENDIX TABLE R-4

Medicaid Children's Dental Service Utilization, by County Type, 1989 and 1992

Georgia

County Type	Percent Children Receiving Dental Visit, 1989	Percent Children Receiving Dental Visit, 1992	% Change	Percent Children Receiving Preventive Dental Visit, 1989	Percent Children Receiving Preventive Dental Visit, 1992	% Change
Total Child Populatiom/Total Dentists						
High Density	12.60	3.46	-0.73	10.96	2.96	-0.73
Medium Density	10.16	13.66	0.34	8.75	12.06	0.38
Low Density	5.18	10.25	0.98	4.45	8.89	1.00

APPENDIX TABLE R-4

Medicaid Children's Dental Service Utilization, by County Type, 1989 and 1992

Michigan

County Type	Percent Children Receiving Dental Visit, 1989	Percent Children Receiving Dental Visit, 1992	% Change	Percent Children Receiving Preventive Dental Visit, 1989	Percent Children Receiving Preventive Dental Visit, 1992	% Change
Total Child Populatiom/Total Dentists						
High Density	23.47	22.74	-0.03	20.10	19.78	-0.02
Medium Density	2.77	3.58	0.29	2.28	2.97	0.30
Low Density	0.05	0.05	0.05	0.04	0.04	0.03

APPENDIX TABLE R-4

Medicaid Children's Dental Service Utilization, by County Type, 1989 and 1992

Tennessee

County Type	Percent Children Receiving Dental Visit, 1989	Percent Children Receiving Dental Visit, 1992	% Change	Percent Children Receiving Preventive Dental Visit, 1989	Percent Children Receiving Preventive Dental Visit, 1992	% Change
Total Child Populatiom/Total Dentists						
High Density	18.13	18.92	0.04	15.75	16.62	0.06
Medium Density	7.22	7.79	0.08	6.02	6.53	0.08
Low Density	1.35	2.80	1.07	1.12	2.32	1.06

Appendix S

Probability of Receiving Various Dental Services:
Pooled Logistic Regression Models

APPENDIX TABLE S-1

LOGISTIC REGRESSION RESULTS: PROBABILITY OF RECEIVING AGE-APPROPRIATE DTP IMMUNIZATIONS, CHILDREN UNDER 3 YEARS OF AGE ONLY

POOLED MODEL INCLUDING INTERACTION TERM AND DUMMY VARIABLE FOR OVERLAP CHILDREN - CALIFORNIA

Dependent Variable: DENTFLG				
Regressor *(X)*	Coefficient		Standard Error	Odds Ratio
Intercept	-2.935	***	0.047	0.053
EP_AG3 (Age 3-6 years)	-0.372	***	0.010	0.689
EP_AG4 (Age 7-12 years)	0.196	***	0.009	1.216
BLACK (Black Race)	-0.334	***	0.012	0.716
OTHER (Other Race)	0.152	***	0.012	1.164
UNKNOWN (Unknown Race)	-0.323	***	0.027	0.724
HISPANIC (Hispanic Ethnicity)	-0.351	***	0.012	0.704
FEMALE	0.057	***	0.007	1.059
URBAN (Urban Residence)	0.308	***	0.043	1.360
SUBURBAN (Suburban Residence)	0.121	**	0.045	1.128
UNIF1 (Blind/Disabled)	-0.079	**	0.026	0.924
UNIF3 (Foster Care)	0.322	***	0.017	1.379
UNIF4 (Poverty-Related)	-0.426	***	0.042	0.653
UNIF5 (Medically Needy)	-0.141	***	0.010	0.868
ADJNOMO12 (Months Enrolled in Medicaid)	0.155	***	0.001	1.168
PARTIC (Well Child Visit)	0.516	***	0.009	1.676
OVERKID (Children with data in both 1989 and 1992)	0.091	***	0.008	1.095
INV_CNT (Participating Dentists to Medicaid Child Enrollees)	38.086	***	4.955	999.000
1992 Year Dummy	0.049	**	0.017	1.050
INT_CNT (1992*Dentists/Enrollees)	19.133	*	8.872	999.000
-2 LOG L			447,398.11	
Chi-Square Statistic			38,195.270	
P Value			0.000	
N			421,027	

* p < .01; ** p < .05

Excluded categories: Ages 1 - 2 years, White, Male, Rural, AFDC/Foster Care, and 1989.

APPENDIX TABLE S-1

LOGISTIC REGRESSION RESULTS: PROBABILITY OF RECEIVING AGE-APPROPRIATE DTP IMMUNIZATIONS, CHILDREN UNDER 3 YEARS OF AGE ONLY

POOLED MODEL INCLUDING INTERACTION TERM AND DUMMY VARIABLE FOR OVERLAP CHILDREN - GEORGIA

Dependent Variable: DENTFLG			
Regressor (X)	Coefficient	Standard Error	Odds Ratio
Intercept	-2.062 ***	0.046	0.127
EP_AG3 (Age 3-6 years)	-0.278 ***	0.021	0.757
EP_AG4 (Age 7-12 years)	0.147 ***	0.020	1.159
BLACK (Black Race)	-0.346 ***	0.019	0.707
OTHER (Other Race)	0.051	0.117	1.053
UNKNOWN (Unknown Race)	-0.185 *	0.092	0.831
HISPANIC (Hispanic Ethnicity)	-0.274	0.145	0.761
FEMALE	0.053 ***	0.016	1.055
URBAN (Urban Residence)	-0.356 ***	0.022	0.701
SUBURBAN (Suburban Residence)	-0.056 *	0.023	0.946
UNIF1 (Blind/Disabled)	-0.218 ***	0.040	0.804
UNIF3 (Foster Care)	0.553 ***	0.053	1.739
UNIF4 (Poverty-Related)	-0.016	0.027	0.984
UNIF5 (Medically Needy)	0.139 ***	0.028	1.149
ADJNOMO12 (Months Enrolled in Medicaid)	0.183 ***	0.003	1.201
PARTIC (Well Child Visit)	1.108 ***	0.020	3.029
OVERKID (Children with data in both 1989 and 1992)	-0.047 **	0.018	0.954
INV_CNT (Participating Dentists to Medicaid Child Enrollees)	-11.419	10.040	0.000
1992 Year Dummy	-0.068	0.038	0.934
INT_CNT (1992*Dentists/Enrollees)	-7.352	16.590	0.001
-2 LOG L	91,955.84		
Chi-Square Statistic	10,919.608		
P Value	0.000		
N	78,421		

* p < .01; ** p < .05

Excluded categories: Ages 1 - 2 years, White, Male, Rural, AFDC/Foster Care, and 1989.

APPENDIX TABLE S-1

LOGISTIC REGRESSION RESULTS: PROBABILITY OF RECEIVING AGE-APPROPRIATE DTP IMMUNIZATIONS, CHILDREN UNDER 3 YEARS OF AGE ONLY

POOLED MODEL INCLUDING INTERACTION TERM AND DUMMY VARIABLE FOR OVERLAP CHILDREN - MICHIGAN

Dependent Variable: DENTFLG				
Regressor (X)	Coefficient		Standard Error	Odds Ratio
Intercept	-2.559	***	0.040	0.077
EP_AG3 (Age 3-6 years)	-0.062	***	0.019	0.940
EP_AG4 (Age 7-12 years)	0.302	***	0.017	1.353
BLACK (Black Race)	-0.378	***	0.017	0.685
OTHER (Other Race)	0.047		0.054	1.048
UNKNOWN (Unknown Race)	-0.290	***	0.079	0.749
HISPANIC (Hispanic Ethnicity)	-0.250	***	0.063	0.779
FEMALE	0.078	***	0.014	1.081
URBAN (Urban Residence)	-0.106	***	0.023	0.900
SUBURBAN (Suburban Residence)	-0.236	***	0.027	0.790
UNIF1 (Blind/Disabled)	-0.473	***	0.040	0.623
UNIF4 (Poverty-Related)	-0.174	***	0.038	0.841
UNIF5 (Medically Needy)	0.191	***	0.018	1.211
ADJNOMO12 (Months Enrolled in Medicaid)	0.177	***	0.003	1.193
MOS_PCCM (Months Enrolled in a PCCM Program)	0.013	***	0.002	1.013
PARTIC (Well Child Visit)	0.659	***	0.017	1.933
OVERKID (Children with data in both 1989 and 1992)	0.112	***	0.015	1.118
INV_CNT (Participating Dentists to Medicaid Child Enrollees)	9.091		6.076	999.000
CLN_FLG (Dental Clinic in County)	-0.021		0.018	0.979
1992 Year Dummy	0.033		0.029	1.033
INT_CNT (1992*Dentists/Enrollees)	-14.140		9.255	0.000
-2 LOG L	121,207.74			
Chi-Square Statistic	11,452.761			
P Value	0.000			
N	103,680			

* p < .01; ** p < .05

Excluded categories: Ages 1 - 2 years, White, Male, Rural, AFDC/Foster Care, and 1989.

APPENDIX TABLE S-1

LOGISTIC REGRESSION RESULTS: PROBABILITY OF RECEIVING ANY DENTAL SERVICES, CHILDREN OVER 3 YEARS OF AGE

POOLED MODEL INCLUDING INTERACTION TERM AND DUMMY VARIABLE FOR OVERLAP CHILDREN - TENNESSEE

Dependent Variable: DENTFLG			
Regressor *(X)*	Coefficient	Standard Error	Odds Ratio
Intercept	-2.777 ***	0.050	0.062
EP_AG3 (Age 3-6 years)	-0.194 ***	0.024	0.824
EP_AG4 (Age 7-12 years)	0.438 ***	0.021	1.549
BLACK (Black Race)	-0.051 **	0.021	0.951
OTHER (Other Race)	-0.377 **	0.149	0.686
UNKNOWN (Unknown Race)	-0.149	0.115	0.862
HISPANIC (Hispanic Ethnicity)	0.226	0.200	1.253
FEMALE	0.104 ***	0.018	1.109
URBAN (Urban Residence)	0.018	0.030	1.018
SUBURBAN (Suburban Residence)	0.092 **	0.030	1.096
UNIF1 (Blind/Disabled)	-0.489 ***	0.040	0.613
UNIF3 (Foster Care)	0.241 ***	0.059	1.273
UNIF4 (Poverty-Related)	-0.272 ***	0.027	0.762
UNIF5 (Medically Needy)	-0.051 *	0.024	0.951
ADJNOMO12 (Months Enrolled in Medicaid)	0.177 ***	0.003	1.193
MOS_PCCM (Months Enrolled in a PCCM Program)	0.010	0.008	1.010
PARTIC (Well Child Visit)	0.650 ***	0.024	1.915
OVERKID (Children with data in both 1989 and 1992)	0.114 ***	0.019	1.121
INV_CNT (Participating Dentists to Medicaid Child Enrollees)	48.394 ***	7.952	999.000
CLN_FLG (Dental Clinic in County)	0.102 ***	0.023	1.107
1992 Year Dummy	0.375 ***	0.040	1.455
INT_CNT (1992*Dentists/Enrollees)	-86.827 ***	12.640	0.000
-2 LOG L		76,377.59	
Chi-Square Statistic		8,291.909	
P Value		0.000	
N		64,433	

* p < .01; ** p < .05

Excluded categories: Ages 1 - 2 years, White, Male, Rural, AFDC/Foster Care, and 1989.

APPENDIX TABLE S-2

LOGISTIC REGRESSION RESULTS: PROBABILITY OF RECEIVING ANY DIAGNOSTIC DENTAL SERVICES, CHILDREN OVER 3 YEARS OF AGE

POOLED MODEL INCLUDING INTERACTION TERM AND DUMMY VARIABLE FOR OVERLAP CHILDREN - CALIFORNIA

Dependent Variable: DIAGFLG				
Regressor *(X)*	Coefficient		Standard Error	Odds Ratio
Intercept	-3.347	***	0.053	0.035
EP_AG3 (Age 3-6 years)	-0.349	***	0.010	0.706
EP_AG4 (Age 7-12 years)	0.206	***	0.009	1.228
BLACK (Black Race)	-0.301	***	0.012	0.740
OTHER (Other Race)	0.191	***	0.012	1.210
UNKNOWN (Unknown Race)	-0.282	***	0.028	0.754
HISPANIC (Hispanic Ethnicity)	-0.376	***	0.012	0.686
FEMALE	0.054	***	0.008	1.056
URBAN (Urban Residence)	0.667	***	0.049	1.948
SUBURBAN (Suburban Residence)	0.292	***	0.051	1.339
UNIF1 (Blind/Disabled)	-0.191	***	0.027	0.826
UNIF3 (Foster Care)	0.317	***	0.018	1.373
UNIF4 (Poverty-Related)	-0.432	***	0.044	0.649
UNIF5 (Medically Needy)	-0.147	***	0.010	0.863
ADJNOMO12 (Months Enrolled in Medicaid)	0.152	***	0.001	1.164
PARTIC (Well Child Visit)	0.527	***	0.009	1.693
OVERKID (Children with data in both 1989 and 1992)	0.079	***	0.008	1.083
INV_CNT (Participating Dentists to Medicaid Child Enrollees)	26.624	***	5.103	999.000
1992 Year Dummy	0.012		0.018	1.012
INT_CNT (1992*Dentists/Enrollees)	7.420		9.224	999.000
-2 LOG L	428,021.01			
Chi-Square Statistic	35,224.665			
P Value	0.000			
N	421,027			

* p < .01; ** p < .05

Excluded categories: Ages 1 - 2 years, White, Male, Rural, AFDC/Foster Care, and 1989.

APPENDIX TABLE S-2

LOGISTIC REGRESSION RESULTS: PROBABILITY OF RECEIVING ANY DIAGNOSTIC DENTAL SERVICES, CHILDREN OVER 3 YEARS OF AGE

POOLED MODEL INCLUDING INTERACTION TERM AND DUMMY VARIABLE FOR OVERLAP CHILDREN - GEORGIA

Dependent Variable: DIAGFLG			
Regressor (X)	Coefficient	Standard Error	Odds Ratio
Intercept	-2.217 ***	0.047	0.109
EP_AG3 (Age 3-6 years)	-0.255 ***	0.021	0.775
EP_AG4 (Age 7-12 years)	0.167 ***	0.020	1.182
BLACK (Black Race)	-0.338 ***	0.019	0.713
OTHER (Other Race)	0.007	0.119	1.007
UNKNOWN (Unknown Race)	-0.169	0.093	0.845
HISPANIC (Hispanic Ethnicity)	-0.182	0.147	0.834
FEMALE	0.047 **	0.016	1.048
URBAN (Urban Residence)	-0.324 ***	0.022	0.723
SUBURBAN (Suburban Residence)	-0.046 *	0.023	0.955
UNIF1 (Blind/Disabled)	-0.220 ***	0.040	0.803
UNIF3 (Foster Care)	0.572 ***	0.053	1.772
UNIF4 (Poverty-Related)	0.011	0.028	1.011
UNIF5 (Medically Needy)	0.119 ***	0.028	1.127
ADJNOMO12 (Months Enrolled in Medicaid)	0.186 ***	0.003	1.204
PARTIC (Well Child Visit)	1.112 ***	0.020	3.039
OVERKID (Children with data in both 1989 and 1992)	-0.036 *	0.018	0.964
INV_CNT (Participating Dentists to Medicaid Child Enrollees)	-11.209	10.155	0.000
1992 Year Dummy	-0.044	0.038	0.957
INT_CNT (1992*Dentists/Enrollees)	-10.820	16.740	0.000
-2 LOG L		90,687.77	
Chi-Square Statistic		10,831.357	
P Value		0.000	
N		78,421	

* p < .01; ** p < .05

Excluded categories: Ages 1 - 2 years, White, Male, Rural, AFDC/Foster Care, and 1989.

APPENDIX TABLE S-2

LOGISTIC REGRESSION RESULTS: PROBABILITY OF RECEIVING ANY DIAGNOSTIC DENTAL SERVICES, CHILDREN OVER 3 YEARS OF AGE

POOLED MODEL INCLUDING INTERACTION TERM AND DUMMY VARIABLE FOR OVERLAP CHILDREN - MICHIGAN

Dependent Variable: DIAGFLG				
Regressor *(X)*	Coefficient		Standard Error	Odds Ratio
Intercept	-2.685	***	0.041	0.068
EP_AG3 (Age 3-6 years)	-0.046	*	0.019	0.955
EP_AG4 (Age 7-12 years)	0.301	***	0.017	1.351
BLACK (Black Race)	-0.352	***	0.018	0.704
OTHER (Other Race)	0.063		0.054	1.065
UNKNOWN (Unknown Race)	-0.263	***	0.081	0.768
HISPANIC (Hispanic Ethnicity)	-0.267	***	0.064	0.766
FEMALE	0.072	***	0.014	1.075
URBAN (Urban Residence)	-0.090	***	0.023	0.914
SUBURBAN (Suburban Residence)	-0.235	***	0.028	0.790
UNIF1 (Blind/Disabled)	-0.497	***	0.041	0.608
UNIF4 (Poverty-Related)	-0.195	***	0.039	0.823
UNIF5 (Medically Needy)	0.190	***	0.018	1.209
ADJNOMO12 (Months Enrolled in Medicaid)	0.178	***	0.003	1.195
MOS_PCCM (Months Enrolled in a PCCM Program)	0.014	***	0.002	1.014
PARTIC (Well Child Visit)	0.663	***	0.017	1.940
OVERKID (Children with data in both 1989 and 1992)	0.109	***	0.016	1.115
INV_CNT (Participating Dentists to Medicaid Child Enrollees)	9.445		6.151	999.000
CLN_FLG (Dental Clinic in County)	-0.033		0.018	0.967
1992 Year Dummy	0.031		0.029	1.031
INT_CNT (1992*Dentists/Enrollees)	-10.996		9.365	0.000
-2 LOG L	118,902.33			
Chi-Square Statistic	11,228.738			
P Value	0.000			
N	103,680			

* p < .01; ** p < .05

Excluded categories: Ages 1 - 2 years, White, Male, Rural, AFDC/Foster Care, and 1989.

APPENDIX TABLE S-2

LOGISTIC REGRESSION RESULTS: PROBABILITY OF RECEIVING ANY DIAGNOSTIC DENTAL SERVICES, CHILDREN OVER 3 YEARS OF AGE

POOLED MODEL INCLUDING INTERACTION TERM AND DUMMY VARIABLE FOR OVERLAP CHILDREN - TENNESSEE

Dependent Variable: DIAGFLG				
Regressor (X)	Coefficient		Standard Error	Odds Ratio
Intercept	-2.978	***	0.051	0.051
EP_AG3 (Age 3-6 years)	-0.124	***	0.024	0.884
EP_AG4 (Age 7-12 years)	0.494	***	0.022	1.638
BLACK (Black Race)	0.008		0.021	1.008
OTHER (Other Race)	-0.358	*	0.152	0.699
UNKNOWN (Unknown Race)	-0.149		0.117	0.861
HISPANIC (Hispanic Ethnicity)	0.285		0.204	1.329
FEMALE	0.103	***	0.018	1.109
URBAN (Urban Residence)	0.039		0.031	1.039
SUBURBAN (Suburban Residence)	0.103	***	0.030	1.109
UNIF1 (Blind/Disabled)	-0.478	***	0.041	0.620
UNIF3 (Foster Care)	0.238	***	0.059	1.269
UNIF4 (Poverty-Related)	-0 266	***	0.027	0.766
UNIF5 (Medically Needy)	-0.061	**	0.024	0.941
ADJNOMO12 (Months Enrolled in Medicaid)	0.178	***	0.003	1.195
MOS_PCCM (Months Enrolled in a PCCM Program)	0.010		0.008	1.010
PARTIC (Well Child Visit)	0.652	***	0.024	1.919
OVERKID (Children with data in both 1989 and 1992)	0.101	***	0.019	1.106
INV_CNT (Participating Dentists to Medicaid Child Enrollees)	47.648	***	8.077	999.000
CLN_FLG (Dental Clinic in County)	0.114	***	0.023	1.121
1992 Year Dummy	0.364	***	0.041	1.440
INT_CNT (1992*Dentists/Enrollees)	-84.578	***	12.821	0.000
-2 LOG L			74,709.55	
Chi-Square Statistic			8,216.126	
P Value			0.000	
N			64,433	

* p < .01; ** p < .05

Excluded categories: Ages 1 - 2 years, White, Male, Rural, AFDC/Foster Care, and 1989.

APPENDIX TABLE S-3

LOGISTIC REGRESSION RESULTS: PROBABILITY OF RECEIVING ANY PREVENTIVE DENTAL SERVICES, CHILDREN OVER 3 YEARS OF AGE

POOLED MODEL INCLUDING INTERACTION TERM AND DUMMY VARIABLE FOR OVERLAP CHILDREN - CALIFORNIA

Dependent Variable: PREVFLG			
Regressor *(X)*	Coefficient	Standard Error	Odds Ratio
Intercept	-4.294 ***	0.113	0.014
EP_AG3 (Age 3-6 years)	-1.640 ***	0.022	0.194
EP_AG4 (Age 7-12 years)	-0.953 ***	0.017	0.386
BLACK (Black Race)	-0.372 ***	0.024	0.689
OTHER (Other Race)	0.529 ***	0.020	1.698
UNKNOWN (Unknown Race)	-0.382 ***	0.045	0.683
HISPANIC (Hispanic Ethnicity)	-0.880 ***	0.020	0.415
FEMALE	0.104 ***	0.014	1.109
URBAN (Urban Residence)	0.816 ***	0.107	2.260
SUBURBAN (Suburban Residence)	0.544 ***	0.110	1.723
UNIF1 (Blind/Disabled)	0.333 ***	0.041	1.395
UNIF3 (Foster Care)	0.153 ***	0.032	1.165
UNIF4 (Poverty-Related)	-0.907 ***	0.120	0.404
UNIF5 (Medically Needy)	0.118 ***	0.018	1.126
ADJNOMO12 (Months Enrolled in Medicaid)	0.119 ***	0.003	1.126
PARTIC (Well Child Visit)	0.459 ***	0.017	1.582
OVERKID (Children with data in both 1989 and 1992)	-0 200 ***	0.015	0.818
INV_CNT (Participating Dentists to Medicaid Child Enrollees)	41.511 ***	9.067	999.000
1992 Year Dummy	0 064 *	0.033	1.066
INT_CNT (1992*Dentists/Enrollees)	18.133	16.383	999.000
-2 LOG L	164,254.04		
Chi-Square Statistic	14,601.927		
P Value	0.000		
N	421,027		

* p < .01; ** p < .05

Excluded categories: Ages 1 - 2 years, White, Male, Rural, AFDC/Foster Care, and 1989.

APPENDIX TABLE S-3

LOGISTIC REGRESSION RESULTS: PROBABILITY OF RECEIVING ANY PREVENTIVE DENTAL SERVICES, CHILDREN OVER 3 YEARS OF AGE

POOLED MODEL INCLUDING INTERACTION TERM AND DUMMY VARIABLE FOR OVERLAP CHILDREN - GEORGIA

Dependent Variable: PREVFLG			
Regressor *(X)*	Coefficient	Standard Error	Odds Ratio
Intercept	-2.504 ***	0.049	0.082
EP_AG3 (Age 3-6 years)	-0.141 ***	0.022	0.868
EP_AG4 (Age 7-12 years)	0.325 ***	0.021	1.384
BLACK (Black Race)	-0.319 ***	0.019	0.727
OTHER (Other Race)	-0.019	0.124	0.982
UNKNOWN (Unknown Race)	-0.090	0.096	0.914
HISPANIC (Hispanic Ethnicity)	-0.119	0.152	0.888
FEMALE	-0.008	0.017	0.992
URBAN (Urban Residence)	-0.288 ***	0.023	0.750
SUBURBAN (Suburban Residence)	-0.039	0.024	0.962
UNIF1 (Blind/Disabled)	-0.283 ***	0.042	0.753
UNIF3 (Foster Care)	0.643 ***	0.053	1.902
UNIF4 (Poverty-Related)	0.014	0.029	1.015
UNIF5 (Medically Needy)	0.153 ***	0.029	1.166
ADJNOMO12 (Months Enrolled in Medicaid)	0.188 ***	0.003	1.207
PARTIC (Well Child Visit)	1.113 ***	0.020	3.043
OVERKID (Children with data in both 1989 and 1992)	-0.006	0.019	0.994
INV_CNT (Participating Dentists to Medicaid Child Enrollees)	-19.157	10.455	0.000
1992 Year Dummy	-0.069	0.039	0.933
INT_CNT (1992*Dentists/Enrollees)	4.543	17.152	93.987
-2 LOG L	87,409.10		
Chi-Square Statistic	10,792.835		
P Value	0.000		
N	78,421		

* p < .01; ** p < .05

Excluded categories: Ages 1 - 2 years, White, Male, Rural, AFDC/Foster Care, and 1989

APPENDIX TABLE S-3

LOGISTIC REGRESSION RESULTS: PROBABILITY OF RECEIVING ANY PREVENTIVE DENTAL SERVICES, CHILDREN OVER 3 YEARS OF AGE

POOLED MODEL INCLUDING INTERACTION TERM AND DUMMY VARIABLE FOR OVERLAP CHILDREN - MICHIGAN

Dependent Variable: PREVFLG			
Regressor *(X)*	Coefficient	Standard Error	Odds Ratio
Intercept	-3.015 ***	0.043	0.049
EP_AG3 (Age 3-6 years)	0.045 *	0.019	1.046
EP_AG4 (Age 7-12 years)	0.436 ***	0.018	1.547
BLACK (Black Race)	-0.366 ***	0.018	0.694
OTHER (Other Race)	0.058	0.056	1.059
UNKNOWN (Unknown Race)	-0.205 **	0.083	0.814
HISPANIC (Hispanic Ethnicity)	-0.247 ***	0.065	0.781
FEMALE	0.053 ***	0.015	1.055
URBAN (Urban Residence)	-0.042	0.023	0.959
SUBURBAN (Suburban Residence)	-0.213 ***	0.029	0.808
UNIF1 (Blind/Disabled)	-0.549 ***	0.043	0.578
UNIF4 (Poverty-Related)	-0.205 ***	0.041	0.815
UNIF5 (Medically Needy)	0.212 ***	0.019	1.236
ADJNOMO12 (Months Enrolled in Medicaid)	0.187 ***	0.003	1.206
MOS_PCCM (Months Enrolled in a PCCM Program)	0.013 ***	0.002	1.013
PARTIC (Well Child Visit)	0.660 ***	0.017	1.935
OVERKID (Children with data in both 1989 and 1992)	0.115 ***	0.016	1.122
INV_CNT (Participating Dentists to Medicaid Child Enrollees)	5.459	6.330	234.783
CLN_FLG (Dental Clinic in County)	-0.030	0.018	0.971
1992 Year Dummy	0.022	0.030	1.023
INT_CNT (1992*Dentists/Enrollees)	-6.735	9.625	0.001
-2 LOG L	113,985.17		
Chi-Square Statistic	11,597.759		
P Value	0.000		
N	103,680		

* p < .01; ** p < .05

Excluded categories: Ages 1 - 2 years, White, Male, Rural, AFDC/Foster Care, and 1989.

APPENDIX TABLE S-3

LOGISTIC REGRESSION RESULTS: PROBABILITY OF RECEIVING ANY PREVENTIVE DENTAL SERVICES, CHILDREN OVER 3 YEARS OF AGE

POOLED MODEL INCLUDING INTERACTION TERM AND DUMMY VARIABLE FOR OVERLAP CHILDREN - TENNESSEE

Dependent Variable: PREVFLG			
Regressor *(X)*	Coefficient	Standard Error	Odds Ratio
Intercept	-3.235 ***	0.053	0.039
EP_AG3 (Age 3-6 years)	-0.071 **	0.025	0.931
EP_AG4 (Age 7-12 years)	0.582 ***	0.022	1.789
BLACK (Black Race)	0.041 *	0.021	1.042
OTHER (Other Race)	-0.347 *	0.158	0.707
UNKNOWN (Unknown Race)	-0.088	0.120	0.916
HISPANIC (Hispanic Ethnicity)	0.348	0.209	1.417
FEMALE	0.086 ***	0.018	1.090
URBAN (Urban Residence)	0.082 **	0.031	1.085
SUBURBAN (Suburban Residence)	0.125 ***	0.031	1.133
UNIF1 (Blind/Disabled)	-0.508 ***	0.042	0.602
UNIF3 (Foster Care)	0.266 ***	0.060	1.304
UNIF4 (Poverty-Related)	-0.268 ***	0.028	0.765
UNIF5 (Medically Needy)	-0.064 **	0.025	0.938
ADJNOMO12 (Months Enrolled in Medicaid)	0.181 ***	0.003	1.198
MOS_PCCM (Months Enrolled in a PCCM Program)	0.011	0.008	1.011
PARTIC (Well Child Visit)	0.629 ***	0.024	1.876
OVERKID (Children with data in both 1989 and 1992)	0.127 ***	0.020	1.136
INV_CNT (Participating Dentists to Medicaid Child Enrollees)	49.609 ***	8 256	999 000
CLN_FLG (Dental Clinic in County)	0.115 ***	0.024	1.122
1992 Year Dummy	0.366 ***	0.042	1.442
INT_CNT (1992*Dentists/Enrollees)	-89 314 ***	13.098	0.000
-2 LOG L	72,257.20		
Chi-Square Statistic	8,274 942		
P Value	0 000		
N	64,433		

* p < .01; ** p < .05

Excluded categories: Ages 1 - 2 years, White, Male, Rural, AFDC/Foster Care, and 1989.

APPENDIX TABLE S-4

LOGISTIC REGRESSION RESULTS: PROBABILITY OF RECEIVING ANY THERAPEUTIC DENTAL SERVICES, CHILDREN OVER 3 YEARS OF AGE

POOLED MODEL INCLUDING INTERACTION TERM AND DUMMY VARIABLE FOR OVERLAP CHILDREN - CALIFORNIA

Dependent Variable: THERFLG			
Regressor *(X)*	Coefficient	Standard Error	Odds Ratio
Intercept	-3.772 ***	0.063	0.023
EP_AG3 (Age 3-6 years)	-0.442 ***	0.012	0.643
EP_AG4 (Age 7-12 years)	0.172 ***	0.010	1.188
BLACK (Black Race)	-0.351 ***	0.014	0.704
OTHER (Other Race)	0.369 ***	0.013	1.446
UNKNOWN (Unknown Race)	-0.148 ***	0.032	0.862
HISPANIC (Hispanic Ethnicity)	-0.419 ***	0.013	0.658
FEMALE	0.062 ***	0.009	1.064
URBAN (Urban Residence)	0.635 ***	0.059	1.887
SUBURBAN (Suburban Residence)	0.286 ***	0.061	1.331
UNIF1 (Blind/Disabled)	-0.254 ***	0.032	0.776
UNIF3 (Foster Care)	0.007	0.021	1.007
UNIF4 (Poverty-Related)	-0.368 ***	0.050	0.692
UNIF5 (Medically Needy)	-0.109 ***	0.011	0.897
ADJNOMO12 (Months Enrolled in Medicaid)	0.146 ***	0.002	1.157
PARTIC (Well Child Visit)	0.407 ***	0.011	1.503
OVERKID (Children with data in both 1989 and 1992)	0.030 **	0.010	1.031
INV_CNT (Participating Dentists to Medicaid Child Enrollees)	8.662	6.029	999.000
1992 Year Dummy	0.163 ***	0.021	1.177
INT_CNT (1992*Dentists/Enrollees)	-29 259 **	10.684	0.000
-2 LOG L	351,099.56		
Chi-Square Statistic	22,984.627		
P Value	0.000		
N	421,027		

* p < .01; ** p < .05

Excluded categories: Ages 1 - 2 years, White, Male, Rural, AFDC/Foster Care, and 1989.

APPENDIX TABLE S-4

LOGISTIC REGRESSION RESULTS: PROBABILITY OF RECEIVING ANY THERAPEUTIC DENTAL SERVICES, CHILDREN OVER 3 YEARS OF AGE

POOLED MODEL INCLUDING INTERACTION TERM AND DUMMY VARIABLE FOR OVERLAP CHILDREN - GEORGIA

Dependent Variable: THERFLG				
Regressor (X)	Coefficient		Standard Error	Odds Ratio
Intercept	-2.572	***	0.056	0.076
EP_AG3 (Age 3-6 years)	-0.667	***	0.026	0.513
EP_AG4 (Age 7-12 years)	-0.028		0.023	0.972
BLACK (Black Race)	-0.332	***	0.022	0.718
OTHER (Other Race)	0.138		0.135	1.148
UNKNOWN (Unknown Race)	-0.226		0.115	0.798
HISPANIC (Hispanic Ethnicity)	-0.440	**	0.173	0.644
FEMALE	0.070	***	0.020	1.072
URBAN (Urban Residence)	-0.361	***	0.026	0.697
SUBURBAN (Suburban Residence)	-0.050		0.027	0.952
UNIF1 (Blind/Disabled)	-0.355	***	0.049	0.701
UNIF3 (Foster Care)	0.134	*	0.060	1.143
UNIF4 (Poverty-Related)	-0.062		0.034	0.940
UNIF5 (Medically Needy)	0.086	**	0.033	1.089
ADJNOMO12 (Months Enrolled in Medicaid)	0.162	***	0.004	1.176
PARTIC (Well Child Visit)	0.623	***	0.023	1.865
OVERKID (Children with data in both 1989 and 1992)	-0.163	***	0.022	0.850
INV_CNT (Participating Dentists to Medicaid Child Enrollees)	13.659		11.739	999.000
1992 Year Dummy	-0.033		0.044	0.968
INT_CNT (1992*Dentists/Enrollees)	-16.361		19.534	0.000
-2 LOG L	69,646.63			
Chi-Square Statistic	4,581.687			
P Value	0.000			
N	78,421			

* p < .01; ** p < .05

Excluded categories: Ages 1 - 2 years, White, Male, Rural, AFDC/Foster Care, and 1989.

APPENDIX TABLE S-4

LOGISTIC REGRESSION RESULTS: PROBABILITY OF RECEIVING ANY THERAPEUTIC DENTAL SERVICES, CHILDREN OVER 3 YEARS OF AGE

POOLED MODEL INCLUDING INTERACTION TERM AND DUMMY VARIABLE FOR OVERLAP CHILDREN - MICHIGAN

Dependent Variable: THERFLG			
Regressor *(X)*	Coefficient	Standard Error	Odds Ratio
Intercept	-2.931 ***	0.051	0.053
EP_AG3 (Age 3-6 years)	-0.527 ***	0.025	0.590
EP_AG4 (Age 7-12 years)	0.140 ***	0.021	1.151
BLACK (Black Race)	-0.551 ***	0.023	0.576
OTHER (Other Race)	0.052	0.065	1.054
UNKNOWN (Unknown Race)	-0.363 ***	0.107	0.695
HISPANIC (Hispanic Ethnicity)	-0.186 *	0.077	0.831
FEMALE	0.042 *	0.018	1.043
URBAN (Urban Residence)	-0.146 ***	0.027	0.864
SUBURBAN (Suburban Residence)	-0.256 ***	0.034	0.774
UNIF1 (Blind/Disabled)	-0.528 ***	0.054	0.590
UNIF4 (Poverty-Related)	-0.085	0.050	0.919
UNIF5 (Medically Needy)	0.113 ***	0.023	1.119
ADJNOMO12 (Months Enrolled in Medicaid)	0.147 ***	0.003	1.159
MOS_PCCM (Months Enrolled in a PCCM Program)	0.004	0.003	1.004
PARTIC (Well Child Visit)	0.346 ***	0.021	1.414
OVERKID (Children with data in both 1989 and 1992)	0.068 ***	0.020	1.070
INV_CNT (Participating Dentists to Medicaid Child Enrollees)	12.814	7.521	999.000
CLN_FLG (Dental Clinic in County)	-0.056 **	0.023	0.945
1992 Year Dummy	-0.022	0.037	0.978
INT_CNT (1992*Dentists/Enrollees)	-4.489	11.576	0.011
-2 LOG L	83,763.71		
Chi-Square Statistic	4,617.890		
P Value	0.000		
N	103,680		

* p < .01; ** p < .05

Excluded categories: Ages 1 - 2 years, White, Male, Rural, AFDC/Foster Care, and 1989.

APPENDIX TABLE S-4

LOGISTIC REGRESSION RESULTS: PROBABILITY OF RECEIVING ANY THERAPEUTIC DENTAL SERVICES, CHILDREN OVER 3 YEARS OF AGE

POOLED MODEL INCLUDING INTERACTION TERM AND DUMMY VARIABLE FOR OVERLAP CHILDREN - TENNESSEE

Dependent Variable: THERFLG				
Regressor *(X)*	Coefficient		Standard Error	Odds Ratio
Intercept	-3.035	***	0.062	0.048
EP_AG3 (Age 3-6 years)	-0.530	***	0.031	0.589
EP_AG4 (Age 7-12 years)	0.205	***	0.025	1.228
BLACK (Black Race)	-0.382	***	0.026	0.682
OTHER (Other Race)	-0.135		0.175	0.874
UNKNOWN (Unknown Race)	-0.434	**	0.157	0.648
HISPANIC (Hispanic Ethnicity)	-0.221		0.248	0.801
FEMALE	0.085	***	0.022	1.088
URBAN (Urban Residence)	-0.025		0.036	0.975
SUBURBAN (Suburban Residence)	0.107	**	0.035	1.113
UNIF1 (Blind/Disabled)	-0.501	***	0.052	0.606
UNIF3 (Foster Care)	0.081		0.068	1.085
UNIF4 (Poverty-Related)	-0.145	***	0.034	0.865
UNIF5 (Medically Needy)	0.004		0.029	1.004
ADJNOMO12 (Months Enrolled in Medicaid)	0.149	***	0.004	1.160
MOS_PCCM (Months Enrolled in a PCCM Program)	-0.045	***	0.012	0.956
PARTIC (Well Child Visit)	0.395	***	0.029	1.485
OVERKID (Children with data in both 1989 and 1992)	-0.027		0.023	0.973
INV_CNT (Participating Dentists to Medicaid Child Enrollees)	58.120	***	9.589	999.000
CLN_FLG (Dental Clinic in County)	-0.016		0.027	0.984
1992 Year Dummy	0.257	***	0.050	1.293
INT_CNT (1992*Dentists/Enrollees)	-77.162	***	15.285	0.000
-2 LOG L			56,195.41	
Chi-Square Statistic			3,249.544	
P Value			0.000	
N			64,433	

* p < .01; ** p < .05

Excluded categories: Ages 1 - 2 years, White, Male, Rural, AFDC/Foster Care, and 1989.

Appendix T

Number of Various Dental Services Among Users:
Pooled Linear Regression Models

APPENDIX TABLE T-1

ORDINARY LEAST SQUARES RESULTS: NUMBER OF DENTAL SERVICES, USERS OVER 3 YEARS OF AGE

POOLED MODEL INCLUDING INTERACTION TERM AND DUMMY VARIABLE FOR OVERLAP CHILDREN - CALIFORNIA

Dependent Variable: TOT_CLM		
Regressor *(X)*	Coefficient	Standard Error
Intercept	3.904 ***	0.189
EP_AG3 (Age 3-6 years)	0.180 ***	0.039
EP_AG4 (Age 7-12 years)	-0.235 ***	0.034
BLACK (Black Race)	-0.183 ***	0.046
OTHER (Other Race)	1.092 ***	0.043
UNKNOWN (Unknown Race)	1.304 ***	0.112
HISPANIC (Hispanic Ethnicity)	-0.480 ***	0.043
FEMALE	0.014	0.028
URBAN (Urban Residence)	1.963 ***	0.170
SUBURBAN (Suburban Residence)	1.021 ***	0.176
UNIF1 (Blind/Disabled)	-0.968 ***	0.103
UNIF 3 (Foster Care)	-0.517 ***	0.062
UNIF4 (Poverty-Related)	0.501 **	0.178
UNIF5 (Medically Needy)	0.227 ***	0.037
ADJNOMO12 (Months Enrolled in Medicaid)	0.033 ***	0.006
PARTIC (Well Child Visit)	0.299 ***	0.034
OVERKID (Children with data in both 1989 and 1992)	-0.432 ***	0.031
INV_CNT (Participating Dentists to Medicaid Child Enrollees)	-166.852 ***	19.695
1992 Year Dummy	0.964 ***	0.068
INT_CNT (1992*Dentists/Enrollees)	-275.864 ***	34.393
F Statistic	195.49	
P Value	0.0001	
N	110,937	
R^2	0.032	

* p < .01; ** p < .05

Excluded categories: Ages 1 - 2 years, White, Male, Rural, AFDC/Foster Care, and 1989.

APPENDIX TABLE T-1

ORDINARY LEAST SQUARES RESULTS: NUMBER OF DENTAL SERVICES, USERS OVER 3 YEARS OF AGE

POOLED MODEL INCLUDING INTERACTION TERM AND DUMMY VARIABLE FOR OVERLAP CHILDREN - GEORGIA

Dependent Variable: TOT_CLM		
Regressor *(X)*	Coefficient	Standard Error
Intercept	4.904 ***	0.161
EP_AG3 (Age 3-6 years)	-0.597 ***	0.070
EP_AG4 (Age 7-12 years)	-0.058	0.065
BLACK (Black Race)	-0.149 **	0.059
OTHER (Other Race)	0.721	0.393
UNKNOWN (Unknown Race)	-0.520	0.308
HISPANIC (Hispanic Ethnicity)	-0.820	0.489
FEMALE	-0.085	0.053
URBAN (Urban Residence)	0.087	0.070
SUBURBAN (Suburban Residence)	0.086	0.073
UNIF1 (Blind/Disabled)	-0.502 ***	0.133
UNIF 3 (Foster Care)	-0.227	0.148
UNIF4 (Poverty-Related)	-0.008	0.092
UNIF5 (Medically Needy)	-0.039	0.091
ADJNOMO12 (Months Enrolled in Medicaid)	0.218 ***	0.011
PARTIC (Well Child Visit)	0.077	0.058
OVERKID (Children with data in both 1989 and 1992)	-0.360 ***	0.059
INV_CNT (Participating Dentists to Medicaid Child Enrollees)	-58.775	31.860
1992 Year Dummy	0.144	0.119
INT_CNT (1992*Dentists/Enrollees)	-17.608	52.847
F Statistic	26.01	
P Value	0.0001	
N	28,578	
R^2	0.017	

* p < .01; ** p < .05

Excluded categories: Ages 1 - 2 years, White, Male, Rural, AFDC/Foster Care, and 1989.

APPENDIX TABLE T-1

ORDINARY LEAST SQUARES RESULTS: NUMBER OF DENTAL SERVICES, USERS OVER 3 YEARS OF AGE

POOLED MODEL INCLUDING INTERACTION TERM AND DUMMY VARIABLE FOR OVERLAP CHILDREN - MICHIGAN

Dependent Variable: TOT_CLM			
Regressor (X)	Coefficient		Standard Error
Intercept	4.516	***	0.119
EP_AG3 (Age 3-6 years)	-0.540	***	0.052
EP_AG4 (Age 7-12 years)	0.208	***	0.047
BLACK (Black Race)	-0.632	***	0.048
OTHER (Other Race)	0.160		0.143
UNKNOWN (Unknown Race)	-0.448	*	0.233
HISPANIC (Hispanic Ethnicity)	-0.197		0.171
FEMALE	-0.069		0.039
URBAN (Urban Residence)	0.044		0.061
SUBURBAN (Suburban Residence)	-0.284	***	0.075
UNIF1 (Blind/Disabled)	-0.660	***	0.117
UNIF4 (Poverty-Related)	0.002		0.112
UNIF5 (Medically Needy)	0.128	**	0.049
ADJNOMO12 (Months Enrolled in Medicaid)	0.129	***	0.008
MOS_PCCM (Months Enrolled in a PCCM Program)	0.007		0.006
PARTIC (Well Child Visit)	-0.046		0.043
OVERKID (Children with data in both 1989 and 1992)	-0.021		0.043
INV_CNT (Participating Dentists to Medicaid Child Enrollees)	-51.077	**	16.753
CLN_FLG (Dental Clinic in County)	-0.147	**	0.050
1992 Year Dummy	0.182	*	0.080
INT_CNT (1992*Dentists/Enrollees)	16.627		25.476
F Statistic	40.41		
P Value	0.0001		
N	35,053		
R^2	0.023		

* p < .01; ** p < .05

Excluded categories: Ages 1 - 2 years, White, Male, Rural, AFDC/Foster Care, and 1989.

APPENDIX TABLE T-1

ORDINARY LEAST SQUARES RESULTS: NUMBER OF DENTAL SERVICES, USERS OVER 3 YEARS OF AGE

POOLED MODEL INCLUDING INTERACTION TERM AND DUMMY VARIABLE FOR OVERLAP CHILDREN - TENNESSEE

Dependent Variable: TOT_CLM		
Regressor *(X)*	Coefficient	Standard Error
Intercept	6.512 ***	0.232
EP_AG3 (Age 3-6 years)	-1.904 ***	0.107
EP_AG4 (Age 7-12 years)	0.485 ***	0.092
BLACK (Black Race)	0.224 **	0.090
OTHER (Other Race)	0.932	0.700
UNKNOWN (Unknown Race)	0.222	0.522
HISPANIC (Hispanic Ethnicity)	-1.913 *	0.931
FEMALE	-0.039	0.076
URBAN (Urban Residence)	1.062 ***	0.132
SUBURBAN (Suburban Residence)	0.814 ***	0.129
UNIF1 (Blind/Disabled)	-1.226 ***	0.181
UNIF 3 (Foster Care)	-0.696 **	0.234
UNIF4 (Poverty-Related)	-0.195	0.121
UNIF5 (Medically Needy)	-0.120	0.104
ADJNOMO12 (Months Enrolled in Medicaid)	0.167 ***	0.015
MOS_PCCM (Months Enrolled in a PCCM Program)	-0.077 **	0.031
PARTIC (Well Child Visit)	-0.195 *	0.095
OVERKID (Children with data in both 1989 and 1992)	-0.170 *	0.082
INV_CNT (Participating Dentists to Medicaid Child Enrollees)	16.507	34.461
CLN_FLG (Dental Clinic in County)	0.037	0.099
1992 Year Dummy	-0.318	0.173
INT_CNT (1992*Dentists/Enrollees)	-159.713 **	53.598
F Statistic	55.48	
P Value	0.0001	
N	23,611	
R^2	0.047	

* p < .01; ** p < .05

Excluded categories: Ages 1 - 2 years, White, Male, Rural, AFDC/Foster Care, and 1989.

APPENDIX TABLE T-2

ORDINARY LEAST SQUARES RESULTS: NUMBER OF DENTAL SERVICES, USERS OVER 3 YEARS OF AGE

POOLED MODEL INCLUDING INTERACTION TERM AND DUMMY VARIABLE FOR OVERLAP CHILDREN - CALIFORNIA

Dependent Variable: DIAG_N		
Regressor *(X)*	Coefficient	Standard Error
Intercept	2.141 ***	0.064
EP_AG3 (Age 3-6 years)	0.124 ***	0.012
EP_AG4 (Age 7-12 years)	0.091 ***	0.010
BLACK (Black Race)	0.033 *	0.014
OTHER (Other Race)	0.115 ***	0.013
UNKNOWN (Unknown Race)	0.193 ***	0.034
HISPANIC (Hispanic Ethnicity)	-0.052 ***	0.013
FEMALE	0.014	0.009
URBAN (Urban Residence)	0.568 ***	0.059
SUBURBAN (Suburban Residence)	0.347 ***	0.061
UNIF1 (Blind/Disabled)	-0.219 ***	0.032
UNIF 3 (Foster Care)	0.122 ***	0.019
UNIF4 (Poverty-Related)	0.001	0.055
UNIF5 (Medically Needy)	0.004	0.011
ADJNOMO12 (Months Enrolled in Medicaid)	0.009 ***	0.002
PARTIC (Well Child Visit)	0.090 ***	0.010
OVERKID (Children with data in both 1989 and 1992)	-0.120 ***	0.009
INV_CNT (Participating Dentists to Medicaid Child Enrollees)	-84.312 ***	5.996
1992 Year Dummy	0.122 ***	0.021
INT_CNT (1992*Dentists/Enrollees)	-45.511 ***	10.684
F Statistic	88.38	
P Value	0.0001	
N	100,703	
R^2	0.016	

* p < .01; ** p < .05

Excluded categories: Ages 1 - 2 years, White, Male, Rural, AFDC/Foster Care, and 1989.

APPENDIX TABLE T-2

ORDINARY LEAST SQUARES RESULTS: NUMBER OF DENTAL SERVICES, USERS OVER 3 YEARS OF AGE

POOLED MODEL INCLUDING INTERACTION TERM AND DUMMY VARIABLE FOR OVERLAP CHILDREN - GEORGIA

Dependent Variable: DIAG_N		
Regressor *(X)*	Coefficient	Standard Error
Intercept	1.680 ***	0.046
EP_AG3 (Age 3-6 years)	-0.195 ***	0.020
EP_AG4 (Age 7-12 years)	0.053 **	0.018
BLACK (Black Race)	-0.006	0.017
OTHER (Other Race)	-0.066	0.111
UNKNOWN (Unknown Race)	-0.120	0.086
HISPANIC (Hispanic Ethnicity)	0.110	0.137
FEMALE	-0.021	0.015
URBAN (Urban Residence)	0.144 ***	0.019
SUBURBAN (Suburban Residence)	0.064 **	0.020
UNIF1 (Blind/Disabled)	-0.169 ***	0.037
UNIF 3 (Foster Care)	-0.050	0.041
UNIF4 (Poverty-Related)	-0.068 **	0.025
UNIF5 (Medically Needy)	-0.002	0.026
ADJNOMO12 (Months Enrolled in Medicaid)	0.072 ***	0.003
PARTIC (Well Child Visit)	0.009	0.016
OVERKID (Children with data in both 1989 and 1992)	-0.024	0.017
INV_CNT (Participating Dentists to Medicaid Child Enrollees)	-12.583	8.900
1992 Year Dummy	0.112 ***	0.033
INT_CNT (1992*Dentists/Enrollees)	-22.109	14.753
F Statistic	46.65	
P Value	0.0001	
N	27,425	
R^2	0.031	

* p < .01; ** p < .05

Excluded categories: Ages 1 - 2 years, White, Male, Rural, AFDC/Foster Care, and 1989.

APPENDIX TABLE T-2

ORDINARY LEAST SQUARES RESULTS: NUMBER OF DENTAL SERVICES, USERS OVER 3 YEARS OF AGE

POOLED MODEL INCLUDING INTERACTION TERM AND DUMMY VARIABLE FOR OVERLAP CHILDREN - MICHIGAN

Dependent Variable: DIAG_N		
Regressor *(X)*	Coefficient	Standard Error
Intercept	1.598 ***	0.031
EP_AG3 (Age 3-6 years)	-0.168 ***	0.013
EP_AG4 (Age 7-12 years)	0.085 ***	0.012
BLACK (Black Race)	-0.071 ***	0.012
OTHER (Other Race)	-0.045	0.037
UNKNOWN (Unknown Race)	-0.071	0.060
HISPANIC (Hispanic Ethnicity)	-0.014	0.044
FEMALE	-0.009	0.010
URBAN (Urban Residence)	0.090 ***	0.016
SUBURBAN (Suburban Residence)	-0.045 *	0.019
UNIF1 (Blind/Disabled)	-0.184 ***	0.030
UNIF4 (Poverty-Related)	-0.069 *	0.029
UNIF5 (Medically Needy)	0.044 ***	0.013
ADJNOMO12 (Months Enrolled in Medicaid)	0.056 ***	0.002
MOS_PCCM (Months Enrolled in a PCCM Program)	0.005 ***	0.002
PARTIC (Well Child Visit)	-0.016	0.011
OVERKID (Children with data in both 1989 and 1992)	0.004	0.011
INV_CNT (Participating Dentists to Medicaid Child Enrollees)	-25.129 ***	4.289
CLN_FLG (Dental Clinic in County)	-0.044 ***	0.013
1992 Year Dummy	-0.006	0.020
INT_CNT (1992*Dentists/Enrollees)	1.988	6.506
F Statistic	74.72	
P Value	0.0001	
N	33,273	
R^2	0.043	

* p < .01; ** p < .05

Excluded categories: Ages 1 - 2 years, White, Male, Rural, AFDC/Foster Care, and 1989.

APPENDIX TABLE T-2

ORDINARY LEAST SQUARES RESULTS: NUMBER OF DENTAL SERVICES, USERS OVER 3 YEARS OF AGE

POOLED MODEL INCLUDING INTERACTION TERM AND DUMMY VARIABLE FOR OVERLAP CHILDREN - TENNESSEE

Dependent Variable: DIAG_N		
Regressor *(X)*	Coefficient	Standard Error
Intercept	2.712 ***	0.086
EP_AG3 (Age 3-6 years)	-0.920 ***	0.039
EP_AG4 (Age 7-12 years)	-0.163 ***	0.034
BLACK (Black Race)	0.331 ***	0.033
OTHER (Other Race)	-0.144	0.257
UNKNOWN (Unknown Race)	0.346	0.192
HISPANIC (Hispanic Ethnicity)	0.002	0.339
FEMALE	-0.042	0.028
URBAN (Urban Residence)	0.565 ***	0.049
SUBURBAN (Suburban Residence)	0.335 ***	0.047
UNIF1 (Blind/Disabled)	-0.431 ***	0.066
UNIF 3 (Foster Care)	-0.241 **	0.085
UNIF4 (Poverty-Related)	-0.090 *	0.044
UNIF5 (Medically Needy)	-0.061	0.038
ADJNOMO12 (Months Enrolled in Medicaid)	0.067 ***	0.006
MOS_PCCM (Months Enrolled in a PCCM Program)	-0.029 **	0.011
PARTIC (Well Child Visit)	-0.100 **	0.034
OVERKID (Children with data in both 1989 and 1992)	-0.010	0.030
INV_CNT (Participating Dentists to Medicaid Child Enrollees)	13.805	12.606
CLN_FLG (Dental Clinic in County)	-0.050	0.037
1992 Year Dummy	-0.608 ***	0.063
INT_CNT (1992*Dentists/Enrollees)	-25.130	19.566
F Statistic	103.17	
P Value	0.0001	
N	22,150	
R^2	0.089	

* p < .01; ** p < .05

Excluded categories: Ages 1 - 2 years, White, Male, Rural, AFDC/Foster Care, and 1989.

APPENDIX TABLE T-3

ORDINARY LEAST SQUARES RESULTS: NUMBER OF DENTAL SERVICES, USERS OVER 3 YEARS OF AGE

POOLED MODEL INCLUDING INTERACTION TERM AND DUMMY VARIABLE FOR OVERLAP CHILDREN - CALIFORNIA

Dependent Variable: PREV_N		
Regressor *(X)*	Coefficient	Standard Error
Intercept	0.974 ***	0.023
EP_AG3 (Age 3-6 years)	0.101 ***	0.005
EP_AG4 (Age 7-12 years)	0.094 ***	0.003
BLACK (Black Race)	-0.012 **	0.005
OTHER (Other Race)	0.007	0.004
UNKNOWN (Unknown Race)	0.013	0.009
HISPANIC (Hispanic Ethnicity)	-0.002	0.004
FEMALE	-0.006 *	0.003
URBAN (Urban Residence)	0.040	0.022
SUBURBAN (Suburban Residence)	0.033	0.023
UNIF1 (Blind/Disabled)	-0.002	0.008
UNIF 3 (Foster Care)	-0.012	0.007
UNIF4 (Poverty-Related)	0.046	0.025
UNIF5 (Medically Needy)	-0.003	0.003
ADJNOMO12 (Months Enrolled in Medicaid)	0.000	0.001
PARTIC (Well Child Visit)	0.000	0.003
OVERKID (Children with data in both 1989 and 1992)	-0.002	0.003
INV_CNT (Participating Dentists to Medicaid Child Enrollees)	-4.015 *	1.876
1992 Year Dummy	0.006	0.007
INT_CNT (1992*Dentists/Enrollees)	-4.569	3.371
F Statistic	61.00	
P Value	0.0001	
N	23,071	
R^2	0.047	

* p < .01; ** p < .05

Excluded categories: Ages 1 - 2 years, White, Male, Rural, AFDC/Foster Care, and 1989.

APPENDIX TABLE T-3

ORDINARY LEAST SQUARES RESULTS: NUMBER OF DENTAL SERVICES, USERS OVER 3 YEARS OF AGE

POOLED MODEL INCLUDING INTERACTION TERM AND DUMMY VARIABLE FOR OVERLAP CHILDREN - GEORGIA

Dependent Variable: PREV_N		
Regressor *(X)*	Coefficient	Standard Error
Intercept	0.765 ***	0.021
EP_AG3 (Age 3-6 years)	0.038 ***	0.009
EP_AG4 (Age 7-12 years)	0.083 ***	0.008
BLACK (Black Race)	-0.045 ***	0.007
OTHER (Other Race)	-0.020	0.051
UNKNOWN (Unknown Race)	-0.083 *	0.038
HISPANIC (Hispanic Ethnicity)	-0.042	0.062
FEMALE	-0.022 ***	0.007
URBAN (Urban Residence)	-0.016	0.009
SUBURBAN (Suburban Residence)	-0.016	0.009
UNIF1 (Blind/Disabled)	0.005	0.017
UNIF 3 (Foster Care)	0.040 *	0.018
UNIF4 (Poverty-Related)	0.000	0.011
UNIF5 (Medically Needy)	0.028 **	0.011
ADJNOMO12 (Months Enrolled in Medicaid)	0.049 ***	0.001
PARTIC (Well Child Visit)	0.006	0.007
OVERKID (Children with data in both 1989 and 1992)	0.001	0.007
INV_CNT (Participating Dentists to Medicaid Child Enrollees)	2.931	3.982
1992 Year Dummy	0.006	0.015
INT_CNT (1992*Dentists/Enrollees)	5.185	6.566
F Statistic	76.58	
P Value	0.0001	
N	25,017	
R^2	0.055	

* p < .01; ** p < .05

Excluded categories: Ages 1 - 2 years, White, Male, Rural, AFDC/Foster Care, and 1989.

APPENDIX TABLE T-3

ORDINARY LEAST SQUARES RESULTS: NUMBER OF DENTAL SERVICES, USERS OVER 3 YEARS OF AGE

POOLED MODEL INCLUDING INTERACTION TERM AND DUMMY VARIABLE FOR OVERLAP CHILDREN - MICHIGAN

Dependent Variable: PREV_N			
Regressor *(X)*	Coefficient		Standard Error
Intercept	0.829	***	0.029
EP_AG3 (Age 3-6 years)	-0.086	***	0.012
EP_AG4 (Age 7-12 years)	0.139	***	0.011
BLACK (Black Race)	-0.072	***	0.011
OTHER (Other Race)	-0.086	**	0.034
UNKNOWN (Unknown Race)	-0.040		0.054
HISPANIC (Hispanic Ethnicity)	0.086	*	0.040
FEMALE	-0.007		0.009
URBAN (Urban Residence)	-0.037	**	0.014
SUBURBAN (Suburban Residence)	-0.058	***	0.018
UNIF1 (Blind/Disabled)	-0.078	**	0.029
UNIF4 (Poverty-Related)	-0.049		0.027
UNIF5 (Medically Needy)	0.016		0.012
ADJNOMO12 (Months Enrolled in Medicaid)	0.037	***	0.002
MOS_PCCM (Months Enrolled in a PCCM Program)	-0.002		0.001
PARTIC (Well Child Visit)	-0.001		0.010
OVERKID (Children with data in both 1989 and 1992)	0.019		0.010
INV_CNT (Participating Dentists to Medicaid Child Enrollees)	-2.260		3.973
CLN_FLG (Dental Clinic in County)	-0.003		0.012
1992 Year Dummy	0.222	***	0.019
INT_CNT (1992*Dentists/Enrollees)	2.844		6.005
F Statistic	78.99		
P Value	0.0001		
N	30,474		
R^2	0.049		

* p < .01; ** p < .05

Excluded categories: Ages 1 - 2 years, White, Male, Rural, AFDC/Foster Care, and 1989.

APPENDIX TABLE T-3

ORDINARY LEAST SQUARES RESULTS: NUMBER OF DENTAL SERVICES, USERS OVER 3 YEARS OF AGE

POOLED MODEL INCLUDING INTERACTION TERM AND DUMMY VARIABLE FOR OVERLAP CHILDREN - TENNESSEE

Dependent Variable: PREV_N		
Regressor *(X)*	Coefficient	Standard Error
Intercept	0.703 ***	0.019
EP_AG3 (Age 3-6 years)	0.013	0.009
EP_AG4 (Age 7-12 years)	0.071 ***	0.008
BLACK (Black Race)	0.038 ***	0.007
OTHER (Other Race)	-0.011	0.058
UNKNOWN (Unknown Race)	0.039	0.043
HISPANIC (Hispanic Ethnicity)	-0.069	0.076
FEMALE	-0.003	0.006
URBAN (Urban Residence)	0.041 ***	0.011
SUBURBAN (Suburban Residence)	0.028 **	0.011
UNIF1 (Blind/Disabled)	0.011	0.015
UNIF 3 (Foster Care)	-0.048 **	0.019
UNIF4 (Poverty-Related)	-0.019 *	0.010
UNIF5 (Medically Needy)	-0.026 **	0.009
ADJNOMO12 (Months Enrolled in Medicaid)	0.036 ***	0.001
MOS_PCCM (Months Enrolled in a PCCM Program)	-0.004	0.002
PARTIC (Well Child Visit)	0.001	0.008
OVERKID (Children with data in both 1989 and 1992)	0.028 ***	0.007
INV_CNT (Participating Dentists to Medicaid Child Enrollees)	19.347 ***	2.811
CLN_FLG (Dental Clinic in County)	-0.002	0.008
1992 Year Dummy	0.058 ***	0.014
INT_CNT (1992*Dentists/Enrollees)	-8.785 *	4.375
F Statistic	72.39	
P Value	0.0001	
N	20,454	
R^2	0.069	

* p < .01; ** p < .05

Excluded categories: Ages 1 - 2 years, White, Male, Rural, AFDC/Foster Care, and 1989.

APPENDIX TABLE T-4

ORDINARY LEAST SQUARES RESULTS: NUMBER OF DENTAL SERVICES, USERS OVER 3 YEARS OF AGE

POOLED MODEL INCLUDING INTERACTION TERM AND DUMMY VARIABLE FOR OVERLAP CHILDREN - CALIFORNIA

Dependent Variable: THER_N		
Regressor *(X)*	Coefficient	Standard Error
Intercept	3.813 ***	0.241
EP_AG3 (Age 3-6 years)	0.732 ***	0.044
EP_AG4 (Age 7-12 years)	-0.597 ***	0.037
BLACK (Black Race)	-0.121 *	0.053
OTHER (Other Race)	0.463 ***	0.046
UNKNOWN (Unknown Race)	1.094 ***	0.124
HISPANIC (Hispanic Ethnicity)	-0.078	0.045
FEMALE	-0.019	0.031
URBAN (Urban Residence)	0.835 ***	0.222
SUBURBAN (Suburban Residence)	0.398	0.229
UNIF1 (Blind/Disabled)	-0.234	0.122
UNIF 3 (Foster Care)	-0.378 ***	0.076
UNIF4 (Poverty-Related)	0.537 **	0.194
UNIF5 (Medically Needy)	0.226 ***	0.040
ADJNOMO12 (Months Enrolled in Medicaid)	-0.010	0.007
PARTIC (Well Child Visit)	0.292 ***	0.038
OVERKID (Children with data in both 1989 and 1992)	-0.324 ***	0.034
INV_CNT (Participating Dentists to Medicaid Child Enrollees)	-52.082 *	22.783
1992 Year Dummy	0.772 ***	0.077
INT_CNT (1992*Dentists/Enrollees)	-181.780 ***	39.692
F Statistic	129.39	
P Value	0.0001	
N	68,535	
R^2	0.035	

* p < .01; ** p < .05

Excluded categories: Ages 1 - 2 years, White, Male, Rural, AFDC/Foster Care, and 1989.

APPENDIX TABLE T-4

ORDINARY LEAST SQUARES RESULTS: NUMBER OF DENTAL SERVICES, USERS OVER 3 YEARS OF AGE

POOLED MODEL INCLUDING INTERACTION TERM AND DUMMY VARIABLE FOR OVERLAP CHILDREN - GEORGIA

Dependent Variable: THER_N			
Regressor *(X)*	Coefficient		Standard Error
Intercept	4.509	***	0.202
EP_AG3 (Age 3-6 years)	0.365	***	0.092
EP_AG4 (Age 7-12 years)	-0.611	***	0.080
BLACK (Black Race)	0.007		0.075
OTHER (Other Race)	0.902	*	0.467
UNKNOWN (Unknown Race)	-0.692		0.410
HISPANIC (Hispanic Ethnicity)	-0.830		0.605
FEMALE	-0.002		0.068
URBAN (Urban Residence)	0.120		0.088
SUBURBAN (Suburban Residence)	0.105		0.092
UNIF1 (Blind/Disabled)	0.296		0.173
UNIF 3 (Foster Care)	-0.312		0.199
UNIF4 (Poverty-Related)	0.226		0.118
UNIF5 (Medically Needy)	-0.134		0.115
ADJNOMO12 (Months Enrolled in Medicaid)	0.029	*	0.014
PARTIC (Well Child Visit)	0.132		0.075
OVERKID (Children with data in both 1989 and 1992)	-0.476	***	0.075
INV_CNT (Participating Dentists to Medicaid Child Enrollees)	-125.312	***	39.279
1992 Year Dummy	-0.082		0.150
INT_CNT (1992*Dentists/Enrollees)	31.740		65.981
F Statistic	13.46		
P Value	0.0001		
N	14,213		
R^2	0.018		

* p < .01; ** p < .05

Excluded categories: Ages 1 - 2 years, White, Male, Rural, AFDC/Foster Care, and 1989.

APPENDIX TABLE T-4

ORDINARY LEAST SQUARES RESULTS: NUMBER OF DENTAL SERVICES, USERS OVER 3 YEARS OF AGE

POOLED MODEL INCLUDING INTERACTION TERM AND DUMMY VARIABLE FOR OVERLAP CHILDREN - MICHIGAN

Dependent Variable: THER_N		
Regressor *(X)*	Coefficient	Standard Error
Intercept	3.841 ***	0.162
EP_AG3 (Age 3-6 years)	0.251 ***	0.077
EP_AG4 (Age 7-12 years)	-0.442 ***	0.064
BLACK (Black Race)	-0.496 ***	0.070
OTHER (Other Race)	0.478 *	0.193
UNKNOWN (Unknown Race)	-0.514	0.337
HISPANIC (Hispanic Ethnicity)	-0.544 *	0.230
FEMALE	0.027	0.055
URBAN (Urban Residence)	0.067	0.081
SUBURBAN (Suburban Residence)	0.002	0.102
UNIF1 (Blind/Disabled)	0.102	0.168
UNIF4 (Poverty-Related)	0.353 *	0.158
UNIF5 (Medically Needy)	0.239 ***	0.068
ADJNOMO12 (Months Enrolled in Medicaid)	0.007	0.011
MOS_PCCM (Months Enrolled in a PCCM Program)	0.009	0.009
PARTIC (Well Child Visit)	0.019	0.062
OVERKID (Children with data in both 1989 and 1992)	-0.169 **	0.060
INV_CNT (Participating Dentists to Medicaid Child Enrollees)	-47.951 *	22.885
CLN_FLG (Dental Clinic in County)	-0.117	0.070
1992 Year Dummy	-0.038	0.113
INT_CNT (1992*Dentists/Enrollees)	23.540	35.350
F Statistic	11.06	
P Value	0.0001	
N	15,763	
R^2	0.014	

* p < .01; ** p < .05

Excluded categories: Ages 1 - 2 years, White, Male, Rural, AFDC/Foster Care, and 1989.

APPENDIX TABLE T-4

ORDINARY LEAST SQUARES RESULTS: NUMBER OF DENTAL SERVICES, USERS OVER 3 YEARS OF AGE

POOLED MODEL INCLUDING INTERACTION TERM AND DUMMY VARIABLE FOR OVERLAP CHILDREN - TENNESSEE

Dependent Variable: THER_N		
Regressor (X)	Coefficient	Standard Error
Intercept	5.900 ***	0.246
EP_AG3 (Age 3-6 years)	0.334 **	0.121
EP_AG4 (Age 7-12 years)	-0.850 ***	0.098
BLACK (Black Race)	-0.630 ***	0.099
OTHER (Other Race)	1.941 **	0.682
UNKNOWN (Unknown Race)	0.520	0.632
HISPANIC (Hispanic Ethnicity)	-2.787 **	0.982
FEMALE	-0.056	0.084
URBAN (Urban Residence)	0.193	0.138
SUBURBAN (Suburban Residence)	0.422 **	0.134
UNIF1 (Blind/Disabled)	-0.019	0.205
UNIF 3 (Foster Care)	-0.118	0.257
UNIF4 (Poverty-Related)	0.524 ***	0.132
UNIF5 (Medically Needy)	0.286 **	0.110
ADJNOMO12 (Months Enrolled in Medicaid)	-0.048 **	0.016
MOS_PCCM (Months Enrolled in a PCCM Program)	-0.027	0.047
PARTIC (Well Child Visit)	-0.029	0.106
OVERKID (Children with data in both 1989 and 1992)	-0.303 ***	0.090
INV_CNT (Participating Dentists to Medicaid Child Enrollees)	-127.153 ***	37.081
CLN_FLG (Dental Clinic in County)	0.002	0.103
1992 Year Dummy	-0.442 *	0.190
INT_CNT (1992*Dentists/Enrollees)	-11.090	57.888
F Statistic	17.78	
P Value	0.0001	
N	11,175	
R^2	0.032	

* p < .01; ** p < .05

Excluded categories: Ages 1 - 2 years, White, Male, Rural, AFDC/Foster Care, and 1989.

Appendix U

Descriptive Expenditure Tables

APPENDIX TABLE U-1
Annual Average Medicaid Expenditures: Users of Any Services
1989 and 1992

	1989				1992			
	California	Georgia	Michigan	Tennessee	California	Georgia	Michigan	Tennessee
All children (under age 21)	987	1,286	935	1,076	888	1,236	1,029	1,099
Age:								
Under 12 months	1,586	2,109	2,435	1,837	1,252	2,063	2,476	2,013
1-2 years old	1,058	1,252	898	937	906	1,217	935	1,078
3-6 years old	588	780	572	747	545	717	617	697
7-12 years old	613	677	446	664	562	652	573	688
13-20 years old	1,401	1,980	1,088	1,451	1,307	2,012	1,273	1,537
Race:								
White	1,003	1,687	878	1,141	862	1,408	977	1,119
Black	972	1,086	1,058	966	883	1,051	1,160	973
Other	864	1,128	695	960	788	965	764	986
Unknown	2,109	6,040	1,438	3,858	3,118	5,867	2,156	5,175
Medicaid Eligibility Category:								
Blind/Disabled	5,263	4,202	3,362	2,294	4,939	3,949	3,952	2,873
AFDC	685	917	813	900	661	903	867	918
Foster Care	1,684	1,186	*	2,123	1,369	1,315	*	2,878
Poverty Related	2,139	2,620	1,575	1,362	858	1,582	1,203	1,064
Medically Needy	1,274	1,373	1,017	974	978	1,092	882	932

* n<30.

Note: All expenditures are in constant 1992 dollars.

APPENDIX TABLE U-2

Change in Annual Average Medicaid Expenditures: Users of Any Services

	Percent Change 1989-1992			
	California	Georgia	Michigan	Tennessee
All children (under age 21)	-10	-4	10	2
Age:				
Under 12 months	-21	-2	2	10
1-2 years old	-14	-3	4	15
3-6 years old	-7	-8	8	-7
7-12 years old	-8	-4	28	4
13-20 years old	-7	2	17	6
Race:				
White	-14	-17	11	-2
Black	-9	-3	10	1
Other	-9	-14	10	3
Unknown	48	-3	50	34
Medicaid Eligibility Category:				
Blind/Disabled	-6	-6	18	25
AFDC	-3	-1	7	2
Foster Care	-19	11	*	36
Poverty Related	-60	-40	-24	-22
Medically Needy	-23	-20	-13	-4

* n<30.

APPENDIX TABLE U-3
Annual Average Medicaid Expenditures: Users of Inpatient Services
1989 and 1992

	1989				1992			
	California	Georgia	Michigan	Tennessee	California	Georgia	Michigan	Tennessee
All children (under age 21)	6,866	5,986	3,581	4,142	5,385	5,798	3,912	4,547
Age:								
Under 12 months	7,237	4,948	2,692	4,381	7,684	4,106	2,720	4,441
1-2 years old	9,095	6,123	4,876	4,025	8,872	6,556	5,265	4,760
3-6 years old	8,174	6,710	5,781	3,532	7,986	6,383	6,887	4,302
7-12 years old	9,206	6,976	5,080	4,477	8,827	7,479	7,648	5,381
13-20 years old	5,738	6,204	4,392	4,134	5,603	6,553	5,111	4,465
Race:								
White	7,575	6,392	3,151	3,821	7,157	5,706	3,456	4,152
Black	7,799	5,572	4,338	4,641	7,805	5,429	4,883	4,831
Other	5,632	6,176	2,903	*	5,665	4,154	3,145	4,034
Unknown	10,310	16,701	5,336	*	13,702	17,916	7,566	16,805
Medicaid Eligibility Category:								
Blind/Disabled	23,404	16,166	14,314	8,590	23,291	15,499	18,664	11,517
AFDC	6,100	5,514	3,372	4,122	6,315	5,593	3,548	4,344
Foster Care	11,368	6,495	*	7,338	10,693	7,218	--	8,585
Poverty Related	5,850	5,318	2,285	3,566	5,012	5,046	2,778	3,733
Medically Needy	6,052	4,837	4,410	4,256	5,704	4,791	5,225	4,665

* n<30.

Note: All expenditures are in constant 1992 dollars.

APPENDIX TABLE U-4

Change in Annual Average Medicaid Expenditures: Users of Inpatient Services

	Percent Change 1989-1992			
	California	Georgia	Michigan	Tennessee
All children (under age 21)	-22	-3	9	10
Age:				
Under 12 months	6	-17	1	1
1-2 years old	-2	7	8	18
3-6 years old	-2	-5	19	22
7-12 years old	-4	7	51	20
13-20 years old	-2	6	16	8
Race:				
White	-6	-11	10	9
Black	0	-3	13	4
Other	1	-33	8	*
Unknown	33	7	42	*
Medicaid Eligibility Category:				
Blind/Disabled	0	-4	30	34
AFDC	4	1	5	5
Foster Care	-6	11	*	17
Poverty Related	-14	-5	22	5
Medically Needy	-6	-1	18	10

* n<30.

Appendix V

Probability of Receiving Health Care Services:
Pooled Logistic Regression Models (Four-Part Model for Expenditures)

APPENDIX TABLE V-1

LOGISTIC REGRESSION RESULTS: PROBABILITY OF RECEIVING ANY HEALTH SERVICES AND PROBABILITY OF AN INPATIENT STAY CONDITIONAL ON USE, CHILDREN 1 TO 12 YEARS OF AGE

POOLED MODEL INCLUDING INTERACTION TERM AND DUMMY VARIABLE FOR OVERLAP CHILDREN - CALIFORNIA

	Dependent Variable: USEHLTH			Dependent Variable: INP_USE		
Regressor (X)	Coefficient	Standard Error	Odds Ratio	Coefficient	Standard Error	Odds Ratio
Intercept	-1.558 ***	0.065	0.210	-4.165 ***	0.147	0.016
EP_AG2 (Age 1-2 years)	1.192 ***	0.013	3.295	1.142 ***	0.031	3.134
EP_AG3 (Age 3-6 years)	0.418 ***	0.010	1.519	0.280 ***	0.029	1.323
BLACK (Black Race)	-0.430 ***	0.015	0.651	0.108 **	0.034	1.114
OTHER (Other Race)	0.219 ***	0.019	1.245	-0.282 ***	0.044	0.754
UNKNOWN (Unknown Race)	-0.148 ***	0.033	0.862	0.245 ***	0.055	1.277
HISPANIC (Hispanic Ethnicity)	-0.352 ***	0.019	0.703	0.379 ***	0.043	1.461
FEMALE	-0.012	0.009	0.988	-0.255 ***	0.021	0.775
URBAN (Urban Residence)	0.081	0.058	1.084	0.243	0.132	1.275
SUBURBAN (Suburban Residence)	0.144 **	0.057	1.155	0.195	0.137	1.215
UNIF1 (Blind/Disabled)	0.549 ***	0.051	1.731	2.111 ***	0.053	8.252
UNIF3 (Foster Care)	0.067 **	0.027	1.069	0.461 ***	0.052	1.586
UNIF4 (Poverty-Related)	0.073 **	0.028	1.076	0.159 **	0.062	1.172
UNIF5 (Medically Needy)	-0.345 ***	0.011	0.708	0.401 ***	0.026	1.493
ADJNOMO12 (Months Enrolled in Medicaid)	0.264 ***	0.001	1.302	-0.006	0.004	0.994
PARTIC (Well Child Visit)	--	--	--	-0.124 ***	0.023	0.884
OVERKID (Children with data in both 1989 and 1992)	0.384 ***	0.010	1.468	-0.061 **	0.025	0.941
SHORTAGE (Shortage Area)	-0.015	0.014	0.985	0.172 ***	0.032	1.187
CLINCP1K (Participating Clinics per 1,000 population)	0.767 ***	0.119	2.154	--	--	--
INV_P02A (Participating Primary Care Providers/Child Medicaid Enrollees)	15.030 ***	3.468	999.000	38.251 ***	6.814	999.000
1992 Year Dummy	-0.331 ***	0.025	0.719	-0.053	0.052	0.949
INT_P02A (Interaction Term of 1992 Year Dummy with INV_P02A)	20.214 ***	5.305	999.000	-28.485 **	11.311	0.000
-2 LOG L		301,555.54			79,338.56	
Chi-Square Statistic		80,299.366			4,700.387	
P Value		0.0001			0.0001	
N		341,311			256,891	

* p < .01; ** p < .05

Excluded categories: Ages 1 - 2 years, White, Male, Rural, AFDC/Foster Care, and 1989.

APPENDIX TABLE V-1

LOGISTIC REGRESSION RESULTS: PROBABILITY OF RECEIVING ANY HEALTH SERVICES AND PROBABILITY OF AN INPATIENT STAY CONDITIONAL ON USE, CHILDREN 1 TO 12 YEARS OF AGE

POOLED MODEL INCLUDING INTERACTION TERM AND DUMMY VARIABLE FOR OVERLAP CHILDREN - GEORGIA

Regressor *(X)*	Dependent Variable: USEHLTH				Dependent Variable: INP_USE			
	Coefficient		Standard Error	Odds Ratio	Coefficient		Standard Error	Odds Ratio
Intercept	-0.815	***	0.065	0.442	-3.138	***	0.115	0.043
EP_AG2 (Age 1-2 years)	1.149	***	0.033	3.155	1.478	***	0.052	4.382
EP_AG3 (Age 3-6 years)	0.467	***	0.026	1.596	0.469	***	0.051	1.598
BLACK (Black Race)	-0.602	***	0.028	0.548	-0.319	***	0.040	0.727
OTHER (Other Race)	-0.087		0.146	0.917	-0.467		0.329	0.627
UNKNOWN (Unknown Race)	-0.164		0.201	0.849	0.329	*	0.135	1.390
HISPANIC (Hispanic Ethnicity)	-0.549	**	0.168	0.578	0.339		0.363	1.404
FEMALE	-0.029		0.023	0.971	-0.304	***	0.035	0.738
URBAN (Urban Residence)	-0.530	***	0.039	0.589	-0.542	***	0.046	0.581
SUBURBAN (Suburban Residence)	-0.192	***	0.039	0.826	-0.245	***	0.047	0.783
UNIF1 (Blind/Disabled)	0.444	***	0.087	1.559	1.612	***	0.076	5.013
UNIF3 (Foster Care)	0.791	***	0.110	2.205	0.069		0.133	1.071
UNIF4 (Poverty-Related)	0.195	***	0.035	1.215	0.158	**	0.050	1.171
UNIF5 (Medically Needy)	0.159	***	0.037	1.172	0.338	***	0.060	1.403
ADJNOMO12 (Months Enrolled in Medicaid)	0.318	***	0.003	1.374	0.062	***	0.007	1.064
PARTIC (Well Child Visit)	--		--	--	-0.051		0.037	0.950
OVERKID (Children with data in both 1989 and 1992)	0.037		0.026	1.038	0.038		0.047	1.039
SHORTAGE (Shortage Area)	-0.252	***	0.024	0.777	-0.047		0.036	0.954
CLINCP1K (Participating Clinics per 1,000 population)	1.076	***	0.273	2.932	--		--	--
INV_P02A (Participating Primary Care Providers/Child Medicaid Enrollees)	-30.897	***	4.256	0.000	-14.277	*	7.110	0.000
1992 Year Dummy	-0.020		0.055	0.980	-0.330	***	0.083	0.719
INT_P02A (Interaction Term of 1992 Year Dummy with INV_P02A)	8.383		6.391	999.000	-10.046		9.926	0.000
-2 LOG L			51,534.70				25,123.08	
Chi-Square Statistic			14,288.992				2,113.531	
P Value			0.0001				0.0001	
N			67,826				54,985	

Excluded categories: Ages 1 - 2 years, White, Male, Rural, AFDC/Foster Care, and 1989.

APPENDIX TABLE V-1

LOGISTIC REGRESSION RESULTS: PROBABILITY OF RECEIVING ANY HEALTH SERVICES AND PROBABILITY OF AN INPATIENT STAY CONDITIONAL ON USE, CHILDREN 1 TO 12 YEARS OF AGE

POOLED MODEL INCLUDING INTERACTION TERM AND DUMMY VARIABLE FOR OVERLAP CHILDREN - MICHIGAN

Regressor *(X)*	Dependent Variable: USEHLTH			Dependent Variable: INP_USE		
	Coefficient	Standard Error	Odds Ratio	Coefficient	Standard Error	Odds Ratio
Intercept	-1.274 ***	0.063	0.280	-4.555 ***	0.126	0.011
EP_AG2 (Age 1-2 years)	1.046 ***	0.031	2.846	1.740 ***	0.055	5.699
EP_AG3 (Age 3-6 years)	0.496 ***	0.025	1.642	0.553 ***	0.055	1.739
BLACK (Black Race)	-0.526 **	0.027	0.591	-0.008	0.044	0.992
OTHER (Other Race)	-0.614 ***	0.082	0.541	-0.231	0.175	0.794
UNKNOWN (Unknown Race)	-0.556 ***	0.111	0.573	-0.184	0.204	0.832
HISPANIC (Hispanic Ethnicity)	0.466 ***	0.092	1.594	0.137	0.197	1.146
FEMALE	-0.016	0.022	0.985	-0.217 ***	0.037	0.805
URBAN (Urban Residence)	-0.256 ***	0.043	0.774	0.216 ***	0.065	1.241
SUBURBAN (Suburban Residence)	-0.109 *	0.046	0.897	0.311 ***	0.073	1.365
UNIF1 (Blind/Disabled)	0.158	0.084	1.171	1.745 ***	0.081	5.723
UNIF4 (Poverty-Related)	0.124 **	0.042	1.132	0.069	0.070	1.072
UNIF5 (Medically Needy)	0.096 ***	0.028	1.101	0.186 ***	0.053	1.205
ADJNOMO12 (Months Enrolled in Medicaid)	0.317 ***	0.003	1.373	0.069 ***	0.008	1.071
MOS_PCCM (Months Enrolled in a PCCM Program)	0.016 ***	0.004	1.016	-0.033 ***	0.007	0.967
PARTIC (Well Child Visit)	--	--	--	-0.022	0.039	0.978
OVERKID (Children with data in both 1989 and 1992)	0.192 ***	0.023	1.212	0.053	0.043	1.055
SHORTAGE (Shortage Area)	-0.019	0.027	0.981	-0.072	0.045	0.931
CLINCP1K (Participating Clinics per 1,000 population)	0.008	0.117	1.008	--	--	--
INV_P02A (Participating Primary Care Providers/Child Medicaid Enrollees)	6.849 *	2.810	943.031	-6.478	4.707	0.002
1992 Year Dummy	-0.034	0.042	0.966	-0.199 **	0.070	0.820
INT_P02A (Interaction Term of 1992 Year Dummy with INV_P02A)	-2.596	3.381	0.075	3.979	5.674	53.486
-2 LOG L		56,779.36			24,066.51	
Chi-Square Statistic		16,229.518			1,922.049	
P Value		0.0001			0.0001	
N		80,803			67,275	

* p < .01; ** p < .05

Excluded categories: Ages 1 - 2 years, White, Male, Rural, AFDC/Foster Care, and 1989.

APPENDIX TABLE V-1

LOGISTIC REGRESSION RESULTS: PROBABILITY OF RECEIVING ANY HEALTH SERVICES AND PROBABILITY OF AN INPATIENT STAY CONDITIONAL ON USE, CHILDREN 1 TO 12 YEARS OF AGE

POOLED MODEL INCLUDING INTERACTION TERM AND DUMMY VARIABLE FOR OVERLAP CHILDREN - TENNESSEE

Regressor *(X)*	Dependent Variable: USEHLTH				Dependent Variable: INP_USE			
	Coefficient		Standard Error	Odds Ratio	Coefficient		Standard Error	Odds Ratio
Intercept	-1.392	***	0.078	0.249	-3.198	***	0.126	0.041
EP_AG2 (Age 1-2 years)	0.929	***	0.041	2.533	1.386	***	0.058	4.000
EP_AG3 (Age 3-6 years)	0.316	***	0.032	1.371	0.460	***	0.055	1.584
BLACK (Black Race)	-0.594	***	0.033	0.552	-0.265	***	0.046	0.767
OTHER (Other Race)	-0.978	***	0.167	0.376	-1.345	*	0.587	0.260
UNKNOWN (Unknown Race)	-0.279		0.214	0.757	0.404	*	0.186	1.498
HISPANIC (Hispanic Ethnicity)	0.473	*	0.229	1.605	1.106		0.660	3.023
FEMALE	0.054	*	0.028	1.056	-0.124	**	0.038	0.884
URBAN (Urban Residence)	-0.448	***	0.049	0.639	-0.274	***	0.062	0.760
SUBURBAN (Suburban Residence)	0.001		0.049	1.001	-0.064		0.059	0.938
UNIF1 (Blind/Disabled)	-0.581	***	0.080	0.560	1.418	***	0.080	4.127
UNIF3 (Foster Care)	0.074		0.132	1.077	0.042		0.169	1.043
UNIF4 (Poverty-Related)	-0.019		0.037	0.981	-0.088		0.049	0.916
UNIF5 (Medically Needy)	0.103	**	0.039	1.108	0.295	***	0.059	1.343
ADJNOMO12 (Months Enrolled in Medicaid)	0.332	***	0.004	1.393	0.063	***	0.008	1.065
MOS_PCCM (Months Enrolled in a PCCM Program)	13.399		95.394	999.000	-0.026		0.022	0.974
PARTIC (Well Child Visit)	--		--	--	-0.001		0.042	0.999
OVERKID (Children with data in both 1989 and 1992)	0.296	***	0.031	1.345	-0.053		0.046	0.949
SHORTAGE (Shortage Area)	0.039		0.038	1.040	-0.233	***	0.050	0.792
CLINCP1K (Participating Clinics per 1,000 population)	-0.151		0.100	0.860	--		--	--
INV_P02A (Participating Primary Care Providers/Child Medicaid Enrollees)	28.725	***	6.179	999.000	-15.333		8.492	0.000
1992 Year Dummy	0.329		0.062	1.390	-0.311	***	0.086	0.733
INT_P02A (Interaction Term of 1992 Year Dummy with INV_P02A)	-24.045	***	8.342	0.000	2.676		11.342	14.533
-2 LOG L			25,123.08				21,049.41	
Chi-Square Statistic			2,113.531				1,378.503	
P Value			0.0001				0.0001	
N			54,985				43,164	

* p < .01; ** p < .05

Excluded categories: Ages 1 - 2 years, White, Male, Rural, AFDC/Foster Care, and 1989.

Appendix W

Total Expenditures Among Users:
Pooled Linear Regression Models (Four-Part Model for Expenditures)

APPENDIX TABLE W-1

ORDINARY LEAST SQUARES RESULTS: TOTAL ANNUAL HEALTH CARE EXPENDITURES FOR OUTPATIENT ONLY USERS AND USERS OF ANY INPATIENT SERVICES, CHILDREN 1 - 12 YEARS OF AGE

POOLED MODEL INCLUDING INTERACTION TERM AND DUMMY VARIABLE FOR OVERLAP CHILDREN - CALIFORNIA

Regressor *(X)*	Dependent Variable: LOG_ET#3		Dependent Variable: LOG_ET#4	
	Coefficient	Standard Error	Coefficient	Standard Error
Intercept	4.067 ***	0.026	7.794 ***	0.147
EP_AG2 (Age 1-2 years)	0.429 ***	0.005	0.076 **	0.030
EP_AG3 (Age 3-6 years)	0.091 ***	0.004	-0.037	0.029
BLACK (Black Race)	-0.145 ***	0.006	0.030	0.034
OTHER (Other Race)	0.012	0.006	0.099 *	0.043
UNKNOWN (Unknown Race)	0.097 ***	0.015	0.340 ***	0.053
HISPANIC (Hispanic Ethnicity)	-0.044 ***	0.006	-0.098 *	0.043
FEMALE	-0.058 ***	0.004	-0.028	0.021
URBAN (Urban Residence)	0.041	0.023	0.030	0.132
SUBURBAN (Suburban Residence)	0.018	0.022	-0.070	0.137
UNIF1 (Blind/Disabled)	1.096 ***	0.018	0.962 ***	0.049
UNIF3 (Foster Care)	0.474 ***	0.010	0.479 ***	0.051
UNIF4 (Poverty-Related)	0.023	0.013	0.036	0.062
UNIF5 (Medically Needy)	0.033 ***	0.005	0.129 ***	0.028
ADJNOMO12 (Months Enrolled in Medicaid)	0.107 ***	0.001	0.036 ***	0.004
PARTIC (Well Child Visit)	—	—	0.012	0.024
OVERKID (Children with data in both 1989 and 1992)	0.007	0.004	-0.053 *	0.025
SHORTAGE (Shortage Area)	0.086 ***	0.005	0.087 **	0.032
CLINCP1K (Participating Clinics per 1,000 Population)	-0.578 ***	0.047	—	—
INV_P02A (Participating Primary Care Providers/Child Medicaid Enrollees)	8.168 ***	1.372	-13.024	6.976
1992 Year Dummy	-0.049 ***	0.010	-0.128 *	0.053
INT_P02A (Interaction Term of 1992 Year Dummy with INV_P02A)	-2.467	2.110	5.288	11.585
F Statistic	1934.686		56.680	
P Value	0.0001		0.0001	
N	246,964		9,924	
R^2	0.136		0.103	

* p < .01; ** p < .05

APPENDIX TABLE W-1

ORDINARY LEAST SQUARES RESULTS: TOTAL ANNUAL HEALTH CARE EXPENDITURES FOR OUTPATIENT ONLY USERS AND USERS OF ANY INPATIENT SERVICES, CHILDREN 1 - 12 YEARS OF AGE

POOLED MODEL INCLUDING INTERACTION TERM AND DUMMY VARIABLE FOR OVERLAP CHILDREN - GEORGIA

Regressor *(X)*	Dependent Variable: LOG_ET#3 Coefficient	Dependent Variable: LOG_ET#3 Standard Error	Dependent Variable: LOG_ET#4 Coefficient	Dependent Variable: LOG_ET#4 Standard Error
Intercept	4.488 ***	0.029	7.621 ***	0.078
EP_AG2 (Age 1-2 years)	0.307 ***	0.013	0.082 *	0.036
EP_AG3 (Age 3-6 years)	0.035 ***	0.011	0.010	0.036
BLACK (Black Race)	-0.355 ***	0.010	-0.145 ***	0.027
OTHER (Other Race)	-0.108	0.067	0.542 *	0.235
UNKNOWN (Unknown Race)	0.069	0.065	0.187 *	0.081
HISPANIC (Hispanic Ethnicity)	-0.223 **	0.078	-0.606 *	0.259
FEMALE	-0.092 ***	0.009	-0.047	0.025
URBAN (Urban Residence)	-0.054 ***	0.014	0.387 ***	0.032
SUBURBAN (Suburban Residence)	-0.023	0.014	0.148 ***	0.032
UNIF1 (Blind/Disabled)	0.845 ***	0.031	0.852 ***	0.048
UNIF3 (Foster Care)	0.509 ***	0.032	0.147	0.094
UNIF4 (Poverty-Related)	0.076 ***	0.014	-0.049	0.035
UNIF5 (Medically Needy)	0.087 ***	0.016	-0.010	0.043
ADJNOMO12 (Months Enrolled in Medicaid)	0.125 ***	0.002	0.038	0.005
PARTIC (Well Child Visit)	--	--	0.009	0.027
OVERKID (Children with data in both 1989 and 1992)	-0.043 ***	0.011	0.005	0.033
SHORTAGE (Shortage Area)	-0.001	0.009	0.045	0.025
CLINCP1K (Participating Clinics per 1,000 Population)	0.394 ***	0.088	--	--
INV_P02A (Participating Primary Care Providers/Child Medicaid Enrollees)	-9.348 ***	1.930	16.786 ***	4.598
1992 Year Dummy	-0.128 ***	0.022	-0.069	0.056
INT_P02A (Interaction Term of 1992 Year Dummy with INV_P02A)	5.450 *	2.607	16.172 *	6.657
F Statistic	417.016		48.321	
P Value	0.0001		0.0001	
N	51,262		3,723	
R^2	0.140		0.207	

* p < .01; ** p < .05

APPENDIX TABLE W-1

ORDINARY LEAST SQUARES RESULTS: TOTAL ANNUAL HEALTH CARE EXPENDITURES FOR OUTPATIENT ONLY USERS AND USERS OF ANY INPATIENT SERVICES, CHILDREN 1 - 12 YEARS OF AGE

POOLED MODEL INCLUDING INTERACTION TERM AND DUMMY VARIABLE FOR OVERLAP CHILDREN - MICHIGAN

	Dependent Variable: LOG_ET#3		Dependent Variable: LOG_ET#4	
Regressor *(X)*	Coefficient	Standard Error	Coefficient	Standard Error
Intercept	3.989 ***	0.027	7.182 ***	0.106
EP_AG2 (Age 1-2 years)	0.435 ***	0.011	-0.046	0.047
EP_AG3 (Age 3-6 years)	0.120 ***	0.009	-0.021	0.047
BLACK (Black Race)	-0.220 ***	0.010	0.117 ***	0.036
OTHER (Other Race)	-0.247 ***	0.034	-0.035	0.146
UNKNOWN (Unknown Race)	-0.093	0.050	0.290	0.164
HISPANIC (Hispanic Ethnicity)	0.162 ***	0.039	0.014	0.165
FEMALE	-0.097 ***	0.008	-0.073 *	0.031
URBAN (Urban Residence)	0.074 ***	0.015	0.195 ***	0.054
SUBURBAN (Suburban Residence)	0.012	0.017	0.052	0.061
UNIF1 (Blind/Disabled)	1.004 ***	0.029	1.172 ***	0.063
UNIF4 (Poverty-Related)	0.025	0.017	-0.056	0.058
UNIF5 (Medically Needy)	0.079 ***	0.011	0.195 ***	0.045
ADJNOMO12 (Months Enrolled in Medicaid)	0.120 ***	0.002	0.046 ***	0.007
MOS_PCCM (Months Enrolled in a PCCM Program)	0.008 ***	0.001	0.008	0.006
PARTIC (Well Child Visit)	--	--	0.064	0.033
OVERKID (Children with data in both 1989 and 1992)	0.024 **	0.009	-0.037	0.037
SHORTAGE (Shortage Area)	-0.011	0.010	0.024	0.038
CLINCP1K (Participating Clinics per 1,000 Population)	-0.030	0.042	--	--
INV_P02A (Participating Primary Care Providers/Child Medicaid Enrollees)	2.317 *	1.029	10.003 *	4.092
1992 Year Dummy	0.002	0.015	0.160 **	0.058
INT_P02A (Interaction Term of 1992 Year Dummy with INV_P02A)	-1.834	1.233	10.637 *	4.712
F Statistic	502.28		28.663	
P Value	0.0001		0.0001	
N	64,032		3,242	
R^2	0.136		0.151	

* $p < .01$; ** $p < .05$

APPENDIX TABLE W-1

ORDINARY LEAST SQUARES RESULTS: TOTAL ANNUAL HEALTH CARE EXPENDITURES FOR OUTPATIENT ONLY USERS AND USERS OF ANY INPATIENT SERVICES, CHILDREN 1 - 12 YEARS OF AGE

POOLED MODEL INCLUDING INTERACTION TERM AND DUMMY VARIABLE FOR OVERLAP CHILDREN - TENNESSEE

	Dependent Variable: LOG_ET#3		Dependent Variable: LOG_ET#4	
Regressor *(X)*	Coefficient	Standard Error	Coefficient	Standard Error
Intercept	4.299 ***	0.034	7.359 ***	0.101
EP_AG2 (Age 1-2 years)	0.205 ***	0.015	0.108 *	0.046
EP_AG3 (Age 3-6 years)	-0.026 *	0.013	-0.070	0.043
BLACK (Black Race)	-0.389 ***	0.012	-0.055	0.036
OTHER (Other Race)	-0.368 ***	0.089	-0.042	0.477
UNKNOWN (Unknown Race)	-0.061	0.089	0.477 ***	0.127
HISPANIC (Hispanic Ethnicity)	0.128	0.121	0.087	0.533
FEMALE	-0.066 ***	0.011	-0.013	0.030
URBAN (Urban Residence)	-0.087 ***	0.019	0.097 *	0.047
SUBURBAN (Suburban Residence)	0.020	0.018	-0.033	0.045
UNIF1 (Blind/Disabled)	0.697 ***	0.033	0.829 ***	0.057
UNIF3 (Foster Care)	0.573 ***	0.044	0.650 ***	0.132
UNIF4 (Poverty-Related)	-0.041 **	0.014	-0.098 **	0.038
UNIF5 (Medically Needy)	0.034 *	0.016	0.011	0.048
ADJNOMO12 (Months Enrolled in Medicaid)	0.122 ***	0.002	0.038 ***	0.006
MOS_PCCM (Months Enrolled in a PCCM Program)	-0.015 **	0.005	-0.045 *	0.019
PARTIC (Well Child Visit)	--	--	0.054	0.033
OVERKID (Children with data in both 1989 and 1992)	0.014	0.012	0.004	0.036
SHORTAGE (Shortage Area)	0.067 ***	0.014	0.038	0.038
CLINCP1K (Participating Clinics per 1,000 Population)	-0.155 ***	0.037	--	--
INV_P02A (Participating Primary Care Providers/Child Medicaid Enrollees)	25.510 ***	2.435	-1.173	6.951
1992 Year Dummy	0.051 *	0.024	-0.037	0.070
INT_P02A (Interaction Term of 1992 Year Dummy with INV_P02A)	-8.066 **	3.120	11.304	9.250
F Statistic	310.139		48.321	
P Value	0.0001		0.0001	
N	400,039		3,723	
R^2	0.140		0.207	

* p < .01; ** p < .05